Towards the New Pattern of Education in India

P. D. SHUKLA

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TOWARDS THE NEW PATTERN OF EDUCATION IN INDIA

REVIEWS OF THE BOOK

Dr. Shukla, the author of *Towards the New Pattern of Education in India* has been the Chairman of the National Committee on 10+2+3 Pattern of Education. . . The main implications of the pattern have been analysed by the author starting from its conceptual framework. . . The author has attempted to discuss the conceptual basis of work experience, vocationalisation of secondary education, compulsory teaching of science and curricular and evaluation reforms. . . Dr. Shukla has pointed out that the new structure cannot be introduced overnight: 'Necessary preparation has to be made and advance action taken if the programme is to succeed and to result in improvement of educational standards.' The section on non-formal education deserves special mention as it is only in this that India can find a panacea for its educational evils. 'With the introduction of the new system, non-formal education becomes even more valuable to the country' . . . Dr. Shukla has listed examples of non-formal education programmes in progress. Programmes on a priority basis for the different age-levels have also been cited by the author. The chapters on 'Teacher Education' and the 'Changing Frontiers of Pedagogy' aim at revitalising teacher education programmes. . . This publication is a timely one as more and more States (in India) are switching over to the 10+2+3 pattern.

—*Prospects*, *Quarterly Review on Education*, UNESCO,
Paris, Volume VII, November 1, 1977.

In his book *Towards the New Pattern of Education in India* the author Dr. P.D. Shukla has spelt out the implications of the 10+2+3 concept in education. . . According to the author the secondary stage of education is likely to be terminal for a large segment of students. Hence, if the 10+2+3 pattern with the accent on vocationalisation is made effective, the pressure on the universities will be reduced considerably. . . An important point which the author stresses in this context is that the new system of education is not likely to provide employment to all persons. While the proposed system will not solve problems of unemployment, it would certainly produce more employable material. The author's comments on the quality of question papers and the marking systems are again very apt. . . The author goes on to question why students in the languages or the humanities are not allowed to score high marks like the students of Mathematics. . . The training of teachers again comes in for a fair extent of meaningful comment. . . I consider that Dr. P.D. Shukla's book is very timely and will benefit teachers, students, heads of institutions and the last but not least the parents on what is the true significance of the 10+2+3 formula in the field of secondary education.

—*The Education Quarterly*, Ministry of Education
and Social Welfare, Government of India, New Delhi,
January, 1977.

TOWARDS THE NEW PATTERN OF EDUCATION IN INDIA

(INCLUDING THE EDUCATION POLICY, 1986)

P.D. SHUKLA

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PREFACE TO THE THIRD EDITION

I have pleasure in presenting to the reader this third edition of the book. The publication has apparently been received well because the second and revised edition published in 1984 was sold out during a very short period of time. My objective in preparing the original manuscript was to bring out a book of reference on the new (10+2+3) pattern of education, which was being introduced in every state and union territory and through which a wholesale transformation of education in the right direction was expected to be brought about in the country. It is, however, learnt that the book has been found useful as a text-book too in some institutions of teacher education.

Since the publication of the last edition of the book, the Hon'ble Prime Minister of India, Shri Rajiv Gandhi, announced his desire to introduce a new policy of education. His focus has been on fuller development of the human beings, who, as he rightly says, have been neglected all these years under the pressure of material development. Growth of the man can be secured best through good quality education if its benefits are made available to all citizens. Accordingly, he has also changed the name of the Union Ministry of Education to Union Ministry of Human Resources Development and broadened its scope of work.

The new policy has been announced in May 1986. A summary of this policy, which is really based on a review of the on-going policy, has been added as an annexure to the present edition. My own views on various aspects of the new policy have been incorporated in the first chapter, which attempts to give a historical background of the 10+2+3 pattern. This incorporation updates the background material in the book. The data contained in chapter 3 has also been brought up-to-date.

The new education policy strongly endorses the 10+2+3 pattern, which has laid the foundation for a uniform system all over the country and has stimulated educational effort in the correct direction. As such, the new policy has stressed further strengthening of the 10+2+3 pattern and its adoption in those few states too which are still to switch over to it. This pattern together with a common core-curriculum for the whole country incorporated in the new policy will contribute to develop a strong national system of education.

It is to be noted that all important elements like: (i) universalisation of elementary and adult education, (ii) teaching of a set of compulsory subjects, including science and mathematics, from class I to class X in all schools, (iii) effective organisation of SUPW as an integral part of education, (iv) the 3-language formula, (v) vocationalisation of the +2 stage, (vi) selective admission in the formal system of collegiate and university education, (vii) development of a parallel system of non-formal education, (viii) adoption of mother tongue and the regional languages as media of instruction, and (ix) utilisation of education as a means to strengthen national integration, inherent in the 10+2+3 pattern, have been emphasised under the new policy too. Further, whatever be the specific policy of education at a particular time, there are, in the present context in the country, certain problems of Indian education which must be tackled effectively if the ideals enshrined in our constitution are to be reached and the quality of life of all the citizens is to improve. Such problems include (a) school drop-outs, (b) poor physical facilities in our schools, particularly in the rural areas, (c) educational backwardness of the scheduled tribes, scheduled castes, girls and women, and other socially and economically depressed communities and areas, (d) lack of job-orientedness of the educational system, (e) lowness of the average standard of education at both the school and college levels, (f) status, quality and accountability of the teachers as a class, (g) hurdles in the growth of educational leadership, and (h) inadequacy of funds for educational programmes. In this manner, whether we introduce successfully the 10+2+3 pattern of education or implement effectively the new education policy, the end result will be the same: provision of good quality, meaningful and relevant education in the country.

It should also be mentioned that the most appropriate policy will get evolved through its implementation only. In recognition of this principle, the existing machinery for education, particularly at senior levels of planning and administration, needs to be looked into in depth and as a priority item before commencing implementation of the policy. It will be found that it needs considerable strengthening, including revival of the Indian Education Service as included in the new policy. To do this, education must be accepted by all as a speciality and, therefore, it should be put in the hands of only those who understand it in reality and are committed to it.

In preparing this edition of the book, I have received valuable help from my son, Shri R.K. Shukla, a scholar and a senior level business executive, and from Shri K.R. Singhal and Shri N.M. Tagore, both of whom are senior officers of the central government, now retired. I am also thankul to Shri P.K. Patnaik, joint secretary in the Union Ministry of Human Resources Development for sending me a copy of the new policy as soon as it was published and to Professor A.K. Mishra of NCERT for sending me published material to review the chapter on vocationalisation in the book.

I hope the book will continue to serve the cause of Indian education and benefit educational planners and administrators, teacher educators, teachers, parents and others interested in knowing about current educational matters. Any suggestion to improve the book will be thankfully received.

P.D. SHUKLA

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1

GENERAL BACKGROUND

The Calcutta University Commission

The adoption of the common pattern of 10+2+3 for school and college classes has been recommended as an important reform in the Indian system of education for a long time. It is not a new proposition. It was first recommended about 65 years ago by the Calcutta University Commission (1919). At that time, the matriculation examination, which marked the end of the school course and constituted an entrance examination to the universities, was held in different provinces at the end of 10-12 years of schooling. In spite of a large variation in the duration of the school stage, the matriculation examinations were regarded as equivalent to each other in all parts of the country. The matriculation examination was followed by a two-year intermediate course at the end of which another public examination, the intermediate examination, was held. Then came a two-year period of under-graduate education, after which the first degree examination was conducted. All these three examinations—matriculation, intermediate and first-degree—were held by the universities The Commission examined in depth the content of education at the intermediate and the under-graduate stages and came to the conclusion that : (i) the intermediate stage was really a part of the school course and that the students at this stage could be more effectively taught by school methods rather than by those which were appropriate to the university stage, and (ii) the standard of under-graduate education was poor so that the first degree in India was not really comparable to the first degree in the advanced countries.

The Commission, therefore, recommended that:

(1) Dividing line between university and secondary courses should be more appropriately drawn at the intermediate examination rather than at the matriculation;

(2) Duration of under-graduate course for the first degree should be increased to three years;

(3) A Board of Secondary and Intermediate Education should be established for the purpose of reorganising high school and intermediate education on the lines recommended by it and for holding the matriculation and intermediate examinations. The universities would thus be left to their proper sphere, namely, the provision of under-graduate and post-graduate education and the holding of examinations for the first, second or research degrees.

This recommendation made a great impression on Indian educational thought and, for a time, it appeared to be on the verge of universal acceptance. But ultimately it was implemented only in one province, namely, Uttar Pradesh, and that too in a mutilated form. No steps were taken to increase the duration of the first degree course to three years; nor were any effective measures taken to vocationalise the intermediate stage.

The University Education Commission

After the independence of the country, the University Education Commission (1949), under the chairmanship of Dr S. Radhakrishnan had to take up the discussion of the problem once again. After examining the matter from all points of view, this commission also came to the conclusion that it was necessary to adopt the uniform pattern of 10+2+3 for school and college classes. The commission felt that this pattern would make it possible to vocationalise the secondary stage of education so as to divert students into different walks of life at the end of secondary school and thus reduce pressures on university admissions. It also felt that lengthening of the under-graduate course to three years preceded by an intensive preparation at the earlier stage of two years would result in a considerable improvement of standards in higher education. Unfortunately, steps were not taken to implement these recommendations fully

The All India Secondary Education Commission

The problem came up for consideration again when the All

India Secondary Education Commission under the chairmanship of Dr. A.L. Mudaliar submitted its report (1953). The stage was now ripe to re-organise school and university education together on lines recommended by the University Education Commission and the Secondary Education Commission and to adopt a common pattern for school and college classes. At this time, throughout India, the duration of the post-matriculation course leading to the first degree was uniformly four years and it was divided into two stages—two years of intermediate and two years of under-graduate education. The simplest reform would, therefore, have been to add one year to the degree course and to transfer the two years of the intermediate course to the school stage. But for various reasons, and mainly for financial considerations, this could not be done. Instead, the recommendation of the Sargent Report of an eleven-year higher secondary school followed by a three-year course for first degree was revived and the pattern of 8+3+3 was adopted. The intermediate course was, therefore, broken up into two parts and the first year was either added to the school stage or converted into a pre-university course of one year and the second year was added to the two-year under-graduate course for the first degree to create a three-year degree course.

The All India Education Commission

The entire position was reviewed once again by the All India Education Commission (1966) under the chairmanship of Dr. D.S. Kothari. The commission emphasized that there is a direct link between education, national development and prosperity and stated that this link can yield fruits only when the national system of education is properly organised both qualitatively and quantitatively. The commission pointed out that the existing system of education was largely unrelated to life, needs, and aspirations of the people and there was a wide gulf between its content and purposes and the concerns of national development. Realising that the total period of educational course and the duration of its different stages have a direct bearing on the quality of education imparted, it recommended a broadly uniform pattern of education for the whole country and an extension in the total period of schooling to bring about a general rise in the standards of attainment.

After examining the prevalent situation from all points of view, the commission came to the conclusion that it would be highly desirable to adopt the uniform pattern of 10+2+3 for school and college classes in all parts of the country. The commission was also definitely of the view that the school stage should consist of 12 years (10+2) and that every effort should be made to vocationalise the higher secondary stage so that, ultimately, 50 per cent of the enrolment at this stage was in vocational courses.

More specifically, the commission visualised a flexible educational structure covering:

—a pre-school stage of one to three years;

—a primary stage of seven or eight years divided into two sub-stages—a lower primary stage of four or five years and a higher primary stage of three years;

—a lower secondary or high school stage of two or three years in general education or of one to three years in vocational education;

—a higher secondary stage of two years of general education or one to three years of vocational education;

—a higher education stage having a course of three years or more for the first degree (the courses taking more than three years apparently refer to the first degrees in Engineering, Medicine, etc.) and followed by courses for the second or research degrees of varying durations.

The National Policy Statement on Education

Bearing in mind the recommendations of the Indian Education Commission, the Government of India issued in 1968 a National Policy Statement on Education for the country. In this statement, the Government of India stated that it was convinced that "a radical reconstruction of education on the broad lines recommended by the Education Commission is essential for economic and cultural development of the country, for national integration and for realising the ideal of a socialistic pattern of society. This will involve a transformation of the system to relate it more closely to the life of the people; a continuous effort to expand educational opportunity; a sustained and intensive effort to raise the quality of education at all stages; an emphasis on the development of science and technology; and the cultivation of moral and social values. The educational system must produce young men and women of character and ability committed to national service and development. Only then will education be able to play its vital role in promoting national progress, creating a sense of common citizenship and culture, and strengthening national integration. This is necessary if the country is to attain its rightful place in the comity of nations in conformity with its great cultural heritage and its unique potentialities". The policy statement also stated that it would be advantageous to have a broadly uniform educational structure in all parts of the country. The ultimate objective should be to adopt the 1+2+3 pattern.

The CABE* Committee on Educational Structure and Vocationalisation

The proposed transformation of education was not an easy task as it was full of administrative, financial and other practical difficulties. The keenness of the Government of India, however, to bring a change in the educational system of the country is reflected in the deliberations of the various committees, seminars and conferences which were subsequently convened at various levels for implementation of the national policy on education. There was, for instance, a Conference of Education Secretaries and Directors of Education of the States and Union Territories on 4th and 5th May, 1972, in Delhi. Since there was a move in one or two States to reduce the 3-year degree course to 2 years, the conference decided that *status quo* should be maintained until the Central Advisory Board of Education met next. The 36th session of the Central Advisory Board of Education was held in Delhi on 18th and 19th of September, 1972; and earlier to that, the following resolution was passed at a meeting of the committee appointed by the Central Advisory Board of Education on educational structure and vocationalisation held on 10th September, 1972 :

"(i) It would be desirable to adopt a uniform pattern of education, i.e.. 10+2+3, in all parts of the country by the end of the Fifth Five-Year Plan. The Union Ministry of Education and Social Welfare should take up this matter for detailed discussions with all the State Governments and the University Grants Commission. In the light of these discussions, a detailed proposal, with estimates of costs, may be formulated and brought before the next meeting of the Board for taking a final decision.

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*Central Advisory Board of Education.

(ii) Vocationalisation of the secondary stage is an essential and urgent reform. The programmes to be prepared for this purpose will have to be based upon detailed manpower estimates formulated on the basis of district surveys. They will also involve the use of the latest educational technology and the latest teaching methods in vocational training. The board requests the chairman to set up a group of experts to work out detailed proposals for vocationalisation of the secondary stage, suitable for different conditions, and to make them available to the State Governments for necessary action. The programmes will have to be developed in close collaboration between the Ministries of Education, Health, Labour, Agriculture, Industrial Development, etc., and a suitable coordinating machinery for this purpose will have to be created at the Centre, State and District levels."

The Conference of Education Secretaries and DPIs

Before the Central Advisory Board of Education could meet, there was another Conference of Education Secretaries and Directors of Public Instruction on 15th and 16th September, 1972, which passed the following resolution:

"*Adoption of a uniform pattern of school and college classes (10+2+3)*

(1) A uniform pattern of education of 15 years duration leading to the first degree should be adopted by all the States.

(2) Whether there is an addition of one year to the school and college classes, or whether it involves merely a restructuring of the pattern, additional expenditure will necessarily have to be incurred on the scheme for which massive central assistance will be necessary.

Secondary Education

(1) There should be very close co-ordination between the vocational courses attached to the higher secondary stage,

the Industrial Training Institutes and the Polytechnics. Courses selected should have close affinity to the skills and services in demand in the locality. This will involve manpower studies and market surveys and setting up of workshops and production centres as well as financing of the skilled personnel on co-operative or institutional patterns for self-employment or employment in production centres.

(2) The scheme of vocationalisation of education as well as work experience deserves the highest priority in the Plan and should be assisted fully.

(3) Vocational courses prescribed in the institutions would need constant review and replacement as technology, materials and demands change. They would have to keep pace with development of local industries also, particularly the small scale, cottage and consumer industries."

The 1972 Session of Central Advisory Board of Education

The Central Advisory Board of Education in it's meeting held on 18th and 19th September, 1972, under the chairmanship of Prof. S. Nurul Hasan, Union Minister of Education, Social Welfare and Culture, passed the following resolution:

> "The Board reiterates its earlier recommendations made in the 34th meeting that it is desirable to adopt a uniform pattern of education, *viz.*, 10+2+3, in all parts of the country. It notes with satisfaction that three States have implemented the programme and recommends that it should be implemented in all parts of the country by the end of the Fifth Plan. The Ministry of Education and Social Welfare should take up this matter with the State Governments and the University Grants Commission for working out the details.
>
> "In the opinion of the Board, vocationalisation of the secondary stage is an essential and urgent reform. The programmes to be prepared for this purpose will have to be based upon detailed manpower estimates formulated on the basis of district surveys. They will also involve the use of the latest educational technology and the latest teaching methods in vocational training. The board requests the chairman to set up a group of experts to work out detailed proposals for

vocationalisation of the secondary stage, suitable for different conditions and to make them available to the State Governments for necessary action. The programme will have to be developed in close collaboration between the Ministries of Education, Health, Labour, Agriculture, Industrial Development, etc., and suitable co-ordinating machinery for this purpose will have to be created at the Centre, State and District levels."

The Sampurnanand Committee

It should be mentioned that even before the All India Education Commission was set up, the Emotional Integration Committee (1962) appointed by the Government of India under the chairmanship of Dr. Sampurnanand had recommended that from the point of view of national integration the uniform pattern of 10+2+3 should be adopted for school and college classes in all parts of the country. This recommendation was also supported by the Committee of Educationists and Student Leaders appointed under the directive of the National Integration Council and also by several conferences of students' organisations.

Review by the Janata Government

With a change of the ruling party in the Central Government in 1977, it appeared that there might be modification in the new pattern of education and the future implementation of the scheme may be on different lines. The difficulties which had come to notice related to administrative, academic, personnel and financial issues, specially because adequate resources were not available. It is really some mistakes in implementation which were the target of attack rather than the policy itself.

The largest criticism was levelled against the greatly increased academic content, large number of books prescribed and the increasing size of different books during the school stage. The complaint was that the school students were over-burdened with book learning and that little time was left for manual work, games and sports and social service or creative activities. The wisdom and practicability of providing for a compulsory study of the same heavy course in Science and Mathematics by every boy and girl irrespective of his or her capacity and interest were also questioned. It appeared extremely difficult to make available immediately a suitable laboratory to every ten-year school for teaching Science; and the plea that Science at the school stage could be taught well without a laboratory was generally not acceptable to the teachers. The complaint against the +2 stage related mostly to the fact that the suggested vocationalisation was not being attempted on an adequate scale.

The new pattern and its implementation were, therefore, reviewed by the Union Ministry of Education in consultation with a group of experts in an informal meeting in May 1977. The same matter was then considered in a meeting of State and Union Territory education secretaries in August 1977 and in a conference of the Ministers of Education of States and Union Territories in the same month.

The meeting and the conference are understood to have recommended retention of the 10+2 pattern but introduction of it by the end of the Sixth Plan instead of the Fifth Plan, which was the earlier target. It was also urged that adequate provision should be made in the Sixth Plan in order to enable the State Governments and Union Territory administrations to provide for a complete switch-over smoothly and effectively by the prescribed date. A reorganisation of the higher secondary stage, specially the vocationalisation part, was recommended to be done through internal restructuring as well as modification of the content and by developing strong links between education and various development departments such as Industry, Commerce, Agriculture, Health and Community Development.

It should be mentioned in this connection that while replying in the Lok Sabha, in the middle of 1977, to the debate on the demands for education for the 1977-78 budget, Dr. P.C. Chunder, the then Union Minister for Education and Social Welfare, made a policy statement regarding the new pattern of education. He reiterated the Government of India's view on the 10+2 part of the structure and stated that this was not under review. He, however, added that the States were free to choose their own timing for the switch-over keeping in view the local conditions and the availability of resources. As regards the content of the curriculum, he expressed the view that these may need to be reviewed both for the 10-year stage and the +2 stage. In so far as the +3 stage was concerned, the Minister stated that a State which so desired should be allowed to retain a 2-year course for the first degree which may be called the 'pass' degree. There may be an Honours course of one year after this degree or a 3-year integrated Honours course after the +2 stage.

Following the above statement, two review committees were set up by Dr P.C. Chunder in his capacity as President of the National Council of Educational Research and Training. One of these related to the 10-year school and was chaired by Shri Ishwarbhai J. Patel, Vice-chancellor of Gujarat University. The other committee was concerned with the +2 stage of education and was presided over by Dr Malcolm S. Adiseshiah, Vice-chancellor of Madras University. These committees were mainly concerned with reviewing the N.C.E.R.T. documents relating to the 10-year school and the higher secondary stage (including its vocationalisation) respectively and to suggest appropriate plans of action for implementation of the recommendations to be made by them. Reports of these committees were received by the Government of India during late 1977 and early 1978. The significant points raised and recommendations made by the committees will be referred to in the relevant chapters in the book.

The State Education Ministers' conference held in 1981 gave a renewed thrust to the new pattern and expressed the hope that the same will become operative all over the country at an early date.

The Magical Formula of Education (10+2+3 or 8+4+3 Or 7+5+3)*

A lot of good was expected to come out of the educational pattern 10+2+3. As a result of more than a decade's work, public opinion was consolidating in favour of this pattern, although a few States had accepted it with some reluctance. As already indicated, the new governments which assumed power in the Centre and several States in 1977 expressed some dissatisfaction with this pattern. The then Prime Minister, Shri Morarji Desai, was reported to have suggested, presumably while doing some loud thinking, an alternative pattern, namely 8+4+3; and the Government of Gujarat was at that time understood to be thinking

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*Adapted from the author's article under the same heading in the *Education Quarterly*, Government of India, Ministry of Education and Culture, October 1978, pp. 90-92.

of introducing the pattern 7+5+3.

Was there any sanctity associated with these educational formulae, namely 10+2+3 or 8+4+3 or 7+5+3 ? No, certainly not ! While we propose to introduce revolutionary changes in Indian education, we only tinker with the structure of education or the scheme of school classes. We seem to impress upon the people that these magical formulae will bring about sweeping improvements in education. We appear to forget the utter confusion which the periodic announcements of such formulae create in the minds of teachers, other educational workers, students, parents and all those who are connected with education in some way or other. The truth is that all these formulae are basically the same and the structural modifications therein cannot by themselves bring about any significant improvement in education.

In a way, there was no need to introduce even the 10+2+3 structure. All the reforms visualised by this formula could have been introduced in the on-going structure with some adjustments here and there. Apparently, this structure was adopted to implement one of the recommendations of the Indian Education Commission (which had been set up by the government itself) and to bring about a broad uniformity in the pattern of education all over the country. But there were some other advantages (and disadvantages) too !

Although the multiplicity of the structures we were talking about in the year 1978-79 were creating confusion, they were basically the same. Each of the three structures visualises the award of the first degree in general education after a successful study of 15 years (10+2+3=15, 8+4+3=15, 7+5+3=15). Each of them provides for a duration of twelve years for school education and three years for the first degree in general education. So, the variation occurs only in the internal division of the school stage; and it could be 10+2 or 8+4 or 7+5 according to the particular formula we adopt.

If the scientifically accepted age of 6+ for formal education in class I is taken into consideration, we can say that Article 45 of the Constitution of India prescribes eight years of free and compulsory education for all Indian children. This first stage of education of eight years is specifically indicated by the second formula. But the same is contained in the first ten years of schooling indicated by the first formula also. The first stage of seven years included in the third formula is only indicative of the fact that wherever elementary education has, in the past, been of seven years duration, it should continue to be so. In these States, the eighth year of schooling of the second formula is added to the second stage of four years of that formula so that the second stage of the third formula becomes of five years. Thus the second and the third formulae are the same, one being applicable to some States and the other to the rest.

The National Education Conference convened in Delhi in December 1977, by the All India Nai Talim Samiti and blessed by the Government of India, favoured the pattern 8+4+3 not because this formula would specially contribute to promote the Gandhian concept of education which is the objective of the Samiti. The Samiti also supported the implication of the 10+2+3 formula that the first public examination be conducted at the end of ten years of schooling. With the latter provision, the ten years of schooling under the first formula becomes the same as the 8+2 years of schooling under the second formula or the 7+3 years of schooling under the third formula. This same provision also destroys the integrated character of four years of secondary education visualised by the second formula or the five years of secondary education by the third formula. This observation is important because provision of an integrated secondary stage of four or five years is a distinctive feature of the second and the third formulae.

The +2 stage of the first formula expressed variously as higher secondary, junior college or intermediate stage of education in different parts of the country has always been conceived of as a part of school education and is to be handled as such. But in different states, which have already introduced the first formula, this particular stage has been either prefixed to the degree college or set up as an independent unit apart from its being appended to the high school stage. The same situation is likely to exist, in practice, under the second and the third formulae too if and when they are acted upon.

That all the three formulae of education are in effect the same has also been brought out by the Education Minister of Gujarat where the formula 7+5+3 was likely to be introduced from the 1979 academic session. The minister is reported (*The Times of India*, January 26, 1978) to have said that in the adoption of the new pattern, "There would be no structural changes in the State. As such, students, teachers and secondary schools would not be affected adversely. There would be no change in the syllabus also. . . . The present practice of holding public examinations at the end of 10th and 12th standards would continue. Students passing the 10th standard would be free to join different vocational courses. . . ."

Thus all the three structures of education being the same from the point of view of the students, teachers, parents, managements of educational institutions and the government exchequer, there was no point in pressing the case for an alternative pattern of education when even the first one had not been fully consolidated all over the country. This is specially not advisable in the context of India where the people seem to be tired of too many changes introduced too frequently in the country's education during the last thirty-five years. There is a cry to put a halt to such changes, at least in the structure of education which is certainly not its most important aspect.

Reiteration by the Congress Government

While no major policy statement on the pattern of education appears to have been made by the Congress (I) governments which came to power in the Centre and in many States in early 1980, the election manifesto of that party commented adversely on the approach of the Janata government. As regards the future, the same manifesto stated, "Congress will pursue appropriate follow-up action on the constitutional amendment transferring Education from the State to the Concurrent List. Without affecting the existing initiative and autonomy of the State Governments, steps will be devised to bring about a desirable uniformity in the patterns and standard of education throughout the country." The 10+2+3 pattern, whose introduction was initiated by the government of the same political party, aims at bringing about all-India uniformity.

I am strongly of the view that in order to preserve uniformity in the pattern of education, after it has been achieved, the Government of India should utilise the concurrent status of education in the constitution and get a legislation passed to the effect that no state government can change the 10+2+3 structure without consulting other State governments and without the approval of the Union government. This would not fetter the power and authority of any State government, for if a change in the structure is called for all over the country, the same will be supported by all the state governments and approved by the Central government. Since the structure of education is not basic to bring about improvements in the quality and standard of education (although it does help those efforts), there can never be a situation where a particular state government cannot bring about those improvements because it is unable unilaterally to change the operative structure of education within its jurisdiction. On the contrary, the suggested measure will save wasteful and infructuous expenditure of time, energy and money on changing the structure simply because of somebody's fad or fancy. The proposed legislation should, therefore, be welcome to all persons of understanding and vision.

National Policy on Education, 1986

On assuming office of the Prime Minister of India after the general elections in January 1985, Shri Rajiv Gandhi declared that he would introduce a new policy of education so as to prepare the nation to enter the 21st century successfully. Such a policy was duly announced in May, 1986. A summary of this policy is given in the annexure at the end of this book but before the appendices.

In his address at Shantiniketan in December 1985, he stated that "India had achieved tremendous progress in the field of science and technology since Independence, but the vast resource, namely the people, had remained undeveloped". Earlier in August 1985, while inaugurating the conference of state education ministers, he said that "The world is progressing tremendously rapidly. The only thing that can keep India abreast of this progress is a solid grounding in education for all our people . . . . How are we going to prepare the nation to meet the challenges of the next century and to meet the challenges of the latest and newest technology as it comes ?" These were indicative of his mind in respect of the proposed policy. In other words, the focus of the new policy was the man, who had really been neglected under the pressure to develop industry, agriculture and other material aspects of life. In keeping with this objective, he changed the name of the Union Ministry of Education, made it more broad-based and called it the Union Ministry of Human Resource Development.

Speaking spiritually, the man of the 21st century will inherently be the same as that of today. But the scientific, technological, economic and social frame in which he will live and function in future are sure to be different from those of today ; and the new forces thus generated will naturally affect his needs, aspirations, attitudes and behaviour. The new policy, as announced, hopes to meet the challenges of that time by improving the quality of education in all directions and making its benefits available to all people. The main aim of education has always been total development of the student's personality; and every pedagogue knows this. It has, however, not been possible to fully achieve this objective any time, anywhere; albeit different countries have met with varying degree of success in this pursuit. The proposed policy, therefore, poses a special challenge to Indian education to produce citizens who are, by and large, physically, mentally and morally healthy; who are conscious of their duties and rights and are thus socially well adjusted; who are keen to learn on a lifelong basis and incessantly eager to improve their performance; and who, consequently, are well grounded individuals competently contributing to upliftment of the quality of life generally.

There are several ways through which the human resource development can take place. The most obvious process is formal education in the schools and colleges. It can also develop through on-the-spot training during employment, in adult education programmes and through membership of various social, religious, scientific, cultural, political and other groups. A third method is self-development by reading books, journals and other literature, by making use of latest mass media like radio and T.V., by learning from others in informal contacts, and by taking nonformal courses through correspondence or otherwise. The human resource also gets developed through better medical and public health facilities and improvement in nutrition and living conditions of the people. Even for proper utilisation of the latter facilities, the tools of education and educational extension are required to be used. Orientation to self-learning on a continuous basis should, therefore, constitute the most important objective of the new educational policy, particularly in the context of knowledge explosion and fast changing technology of the 21st century. If the human beings are developed as planned and economic well-being continues to grow, the quality of life is bound to improve all over the country, making the people prosperous and happy.

There is nothing very unorthodox, unusual or refreshing about the new policy. It is really a review of the policy announced eighteen years back, but a good and comprehensive review indeed. The broadly uniform pattern of education all over the country built on the 10+2+3 structure has been reiterated after filling some gaps and highlighting some spots. What is special about the present situation, however, is that initiative for the policy has emanated from the Prime Minister himself and it, therefore, carries with it the needed political support. Such a support has never been available to education during the post-Independence period. The Prime Minister's conviction in this regard and his honesty of purpose are confirmed by the fact that a commitment has been made in the present policy about the availability of the required funds for education during the current plan and raising the same further to 6 per cent (or more) of national income of the country from the next plan onwards. This, in a way, is the most encouraging aspect of the new policy; because, since 1966, when the all-India Education Commission recommended making available 6 per cent of the national income for education, continuous efforts have been made to raise the educational allocation, but the actual amount made available has remained far below the recommendation.

The new policy has also suggested a number of other sources for funds for education, including raising of fees at higher education level. The latter source should mean some money, but I do not think the others will bring much. In the past too, proposals were made to raise fees in universities and other centres of higher education because India is one of the cheapest countries in this regard. But no success was possible due to the students' opposition and the political overtones which the proposal created. I am of the view that such fees should be increased to the extent possible and the professional education made self-financing with the condition that a corresponding increase is made in the number of freeships and half-freeships for all those who cannot pay the fees. Even with somewhat increased fees, a good portion of the cost of the 'degree' will continue to be borne from out of public funds, which are collected from the citizens through direct or indirect taxes. The earnings of the possessor of the degree are pocketed by him without any direct benefit to the tax payer. It is well known that some doctors, engineers, business executives, lawyers, administrators and others earn huge amounts on the basis of the degree(s). I, therefore, suggest that the difference between the cost per student of higher education and the tuition fee paid by him be treated as a national loan on the student and he should repay the same as early as possible after he starts earning. This repayment should be the student's personal liability, but his family can also repay the same if it so wishes. This practice will mean the students' participation in the resource mobilisation for their institutions. Such a participation in the academic and management aspects of the universities and other institutions of higher education has already been in vogue in this country for a decade or two with some success.

The real test of any policy is in its implementation. In fact, the right and feasible policy gets evolved through its implementation only. Hence, before a worthwhile development of the valuable human resource can take place through the new policy, the condition of the machinery to undertake that development should be looked into seriously. It would appear that if education is to perform the difficult task, which the Prime Minister visualises through the new policy, some basic changes in our man-power planning for education itself are called for. Firstly, education should be duly recognised as a speciality and it should, therefore, be made the responsibility of those who are committed to it and have aptitude as well as feeling for it. It should not be in the charge of retired politicians or general administrators and others, particularly at top levels like the vice-chancellors of universities and directors of education in the states and union territories. Secondly, to make up for the erosion of the position and authority of the teachers, educationists and educational administrators, effective programmes should be launched to encourage growth of educational leadership in the country. Such programmes should include, as incorporated in the new policy, revival of the Indian Education Service at par with several other all India services already in existence. Further, while the educational administrator should realise that he is functioning in a democracy, the political leaders should enforce on their partymen the discipline of non-interference in administration, specially in the field-work, as is done in the mature democracies of the world.

The emphasis laid in the new policy on improving the physical facilities for and the quality of elementary education through operation Blackboard is very appropriate and timely. I have always considered Basic education, in its modified form, as good quality elementary education. Since the time Basic education was given up as our national pattern for school education on the plea that it was expensive, elementary education has certainly expanded, but its quality is extremely poor and, may I say, even pathetic in a large majority of our rural schools. Similarly, the resolve to solve the large and difficult problem of school drop-outs is commendable. But no specific measures to do so have been indicated unlike some other sectors where actual measures for implementation of the policy have been listed.

At the secondary and higher secondary stages, consolidation instead of expansion has been emphasised. But there appears to be a stronger case for a similar consolidation at the collegiate stage too, about which the policy is silent. The common school system has been a cherished goal in our country since issue of the 1968 policy. But in building up such a system, which must be supported, what will happen to the few hundred 'public' schools generally located in the big cities and the large number of so-called 'public' schools (recognised or unrecognised) which claim to teach through English medium and charge heavy fees. The public shools, the convent schools, and the other high fee charging schools are thriving in the country. There is great pressure on them for admission of children. All of them are self-financing, and many of them save and accummulate enough funds to start an additional branch elsewhere after each period of ten or fifteen years. Even some middle-income-group parents wish to educate their children in such schools. Since these schools cater to the affluent only, they are creating an unhappy cleavage between the rich and the poor. Due to the English medium, such schools also encourage the western culture and discourage our own. As against such schools, the institutions of the state system are under-rated, partly because they are really not well provided and partly because they give free education and are therefore considered cheap and inferior. If the government is unable to find funds to improve the quality of our school education generally, it should not hesitate to charge a development fee from those parents who can afford it, provided the funds so collected are spent directly on the particular school. The proposed change should not only improve the quality of education imparted in the latter schools but it should also raise their status and make them more acceptable to the people. The present situation must not be allowed to continue in any case.

Job-orientedness of education and, therefore, vocationalisation of the +2 stage has been given special attention, which it deserves. For successful implementation of this programme, some very essential measures are called for. These are listed in a later chapter of this book. I would like to add two to them : (1) During the current plan, a well conceived, well organised and satisfactorily implemented programme of vocational courses should be introduced in at least one higher secondary school of every district, and (2) The universities should liberalise their admission policy in favour of students of vocational stream and make them eligible for admission in those under-graduate subjects which are either not taught at the school stage or where the students offer to make up the deficiency. The open university should specially provide for such a liberalisation.

It is hoped that in the field of language teaching, the accepted 3-language formula will become applicable all over the country, as emphasised in the new policy. This will equalise the load of language study on all students in every state. Due to multilingual character of the country, it is in the interest of every educated Indian to possess knowledge, at working or higher level, of at least three languages : regional language, Hindi and English. Experience has confirmed that there can be no better language formula for our country than the one already accepted. In order to find more time in school to study adequately other subjects like science and social studies, which are no less important, introduction of languages under the formula should be staggered from class V/VI to class X with the condition that every language is studied for at least three years. It is also desirable, towards the same end, to make the study of each language available at two levels through alternative syllabi and to permit the students 'to choose any one of them according to their aptitude and future needs. Due to its special position in the culture of this country, Sanskrit should also be accepted as one of the three languages under the formula. This will also be in harmony with the importance given to teaching of Sanskrit in the new policy. In the Hindi speaking states, encouragement should be given to study a south Indian language by as many students as possible; and for this purpose, facilities should be made available in the respective schools. But these states should not be criticised if many children do not offer to study a south Indian language because : (i) most children in these states have no opportunity to use the south Indian languages and, therefore, they have little motivation to study them, and (ii) it is not reasonable to equate Hindi, the constitutionally provided link language, with other national languages of the country. Thus, in the Hindi areas, language combinations like Hindi, English and Urdu, or Hindi, English and Sanskrit, or Hindi, English and Bengali, or Hindi, English and Punjabi should also be fully acceptable under the formula.

English has become the international language. It has also established itself as an important library language in the sense that bulk of the literature on specialised and other important subjects is available through English only. There are, however, some other important foreign languages like Russian, German, French and Japanese. Further, the teaching of English has been gradually introduced even in those countries like Japan, the two Germanies, France and U.S.S.R. where it was never taught and where all work, including teaching, was done through the concerned national language alone. The treasure of English language, which India has acquired through its contact with the British, should, therefore, be preserved; and wherever English is taught as a subject of study, it should be taught well. But it is not educational to use English as a medium of instruction in respect of the students for whom it is neither the mother-tongue nor the regional language. Similar is the practice, at the school stage particularly, all over the world except perhaps in a few countries which do not have a developed language of their own. The same policy should also apply to subjects like agriculture, medicine and law, which are not under the jurisdiction of the Union Ministry of Human Resource Development. It is hoped that the latter objective will gradually be achieved through the national body proposed to be set up under the new policy.

While it is extremely crucial to stop deterioration in the moral standards and ethical values of certain classes of our citizens, the problem cannot be resolved by the schools and colleges alone. Nobody should hope to succeed in this regard if the entire burden is put on the educational institutions alone. Education being a sub-system of the larger social system, the

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teachers alone cannot deliver the goods. Further, in the special subject of moral education, it is the demonstration through personal conduct which is more effective than the class room teaching. So, in addition to involving the educational system, a national movement is called for in which : (a) political, administrative, judicial and every other type of authority as also the parents exhibit the highest level of behaviour, (b) every citizen, particularly the one occupying higher position, adopts Indianness, swadeshism and simplicity as a way of life, and (c) serious economic disparities among the people are reduced and opportunities for work are made available to all those who seek the same. The new policy has adopted a realistic approach in the matter; because it has not put the responsibility for raising the country's moral standard on education alone.

Universalisation of education also includes, as it should, an equally important sector of adult education. I am not enamoured of the traditional approach to adult education, in which literacy is the main objective. Granted that literacy has both cultural and economic value, but experience has fully established that due to lack of motivation on the part of the illiterate adult, schemes of literacy do not click. Even the scheme of functional literacy has not clicked as it was expected to do. In the West, programmes to remove illiteracy succeeded because they were preceded by industrial revolution and, therefore, economic prosperity of the people. In the 20th century, only U.S.S.R has been successful in this field, but that too under very special circumstances. If similar methods could be adopted in India too, immediately after the independence. illiteracy would have disappeared from this country long ago. I believe that literacy in India will spread as good quality elementary education expands. In the meantime and for all time to come, our programmes of education for adults should become more broad based, catering not only to the illiterate but also semi-literate and literate persons. This is, to my mind, specially relevant in the context of the needs of 21st century.

Some measures are also proposed to be taken to re-organise university education. They include a review of the practice of affiliation and the establishment of autonomous colleges and autonomous departments within the same university. But I think that the whole question of governance of our universities is

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called for. We have to examine whether the management and academic set-up of other centres of higher education like the Indian Institutes of Technology or the Indian Institute of Agricultural Research should be adopted for the universities or some new structures should be thought of. The existing structures do not appear to be effective now.

Another important element of the new policy relates to teachers. The qualifications of persons to be selected as teachers, their service conditions, their training, their quality of work, their accountability etc., have all been studied in depth very recently by a national commission. Needless to say that the teacher is the main delivery agent for whatever we wish to give to our students. The teacher will now be expected to change the attitude too of his students, which is an extremely difficult task to perform and which cannot be within the capacity of each and every person to carry out. Even otherwise, the present programme of training the school teachers needs a wholesale reorganisation. The latter should include restoration of the period of training, which was reduced about three decades back as an emergency measure in order to produce school teachers to cope with the massive expansion of education undertaken during the post-independence period. Further, in order to enable the teacher to meet the challenges of the new policy effectively, the salary scale and other conditions of service should be made attractive enough to draw the best talent to join the teaching profession. There are complaints that a section of the teachers of higher education do not take their classes seriously and systematically and that some of the school teachers, particularly in the rural areas, do not attend their institutions regularly. Measures should be evolved, in consultation with the teaching community, to ensure their accountability through a code of conduct and otherwise. Taking into consideration the on-going explosion in knowledge, methodology and technology, every teacher and educational worker, irrespective of his status, should be required to keep himself up-to-date by making use of the various media for information and by undergoing refresher courses at periodic intervals. Actually, such a refreshment is needed today by every kind of functionary, but those in the educational sector should take lead. The new policy has, it is noteworthy, clearly recognised the importance of the teachers and the need to improve their economic status and training. I hope this will be done promptly and satisfactorily.

The Navodaya Vidyalayas

In order to accelerate the growth of talent among the rural children particularly, who have been neglected in this country for a long time, launching of a central scheme of model schools, one in each district, was also announced by the Prime Minister simultaneously with his declaration to introduce a new policy on education. Some details of this scheme are known. In fact, a beginning in implementation of the scheme has already been made through the establishment of the vidyalayas in two or three districts. About 60 schools are proposed to be organised during 1986-87. Development of national talent is a responsibility, which the central government should discharge appropriately. The central funds to be spent on this scheme should, therefore, be considered to be fully justified and very worthwhile. Honourable Shri K.C. Pant, till recently the Union Minister for Education, expressed to me that the scheme is bound to improve the quality of primary education in every district and no alternative scheme exists to improve this quality in the near future. I share his hopes in this regard to some extent. There are, however, certain other aspects of the scheme which need to be looked into seriously to ensure fulfilment of the targeted objectives. I am also glad that the government has accepted my suggestion (perhaps some others may also have made the same suggestion) not to call these schools as Model School; because in education there can never be a last word and, therefore, nothing can really be a model. The new name, Navodaya Vidyalaya, is very appropriate indeed.

The schools will provide classes VI to XII, and not the first five. The truncated character of the schools may make it difficult for them to function as pace-setters, which is also an objective of the scheme. In the case of kendriya vidyalayas, another similar scheme of the central government, we faced the same difficulty and, therefore, classes I to V had to be added after a few years of launching of the scheme. May be that we will have to do the same in respect of the Navodaya Vidyalayas too.

The medium of instruction in these schools was originally to be Hindi for humanities and English for science and mathematics. But children joining the schools in class VI will come from the local language medium schools, which language in a large number of cases will be other than Hindi or English. Their change-over to the new media was likely to be difficult. The scheme has now been amended to provide for mother-tongue or the regional language as medium of instruction in classes VI and VII and to switch over to Hindi and English as media from class VIII onwards. The result of this adjustment will be watched with interest. In any case, properly conceived and duly tested courses and techniques will need to be worked out well in advance in order to prepare the children to change over to Hindi and English as media of instruction. It has also to be noted that a separate course and technique will be called for in respect of each of our languages used as medium of instruction at the primary stage. For this purpose, it should be possible to draw on the expertise available in the Kendriya Hindi Sansthan at Agra, the National Institute of Languages at Mysore and the Central Institute of English and Foreign Languages at Hyderabad. They may not be in possession of ready made solutions because they have been working for the teachers, who are adults. The problems of young children of 10-12 years of age are quite different. Some years back, Deccan College, Pune had evolved a course through which it claimed to give working knowledge in Hindi, through a full-time study spread over 21 days, to the college and university teachers from the USA, who used to come to India for research work. I had attended two of the classes on a test basis, and I felt that the claim could be true. So, it should be possible to organise appropriate language teaching courses to serve the present purpose as well.

For strengthening our system of school education, the Department of Education of the Union Ministry of Human Resource Development has been pressing upon the state governments to make satisfactory arrangements in their institutions for : (i) implementing the 3-language formula, (ii) organising SUPW in a satisfactory manner to supplement the traditional bookish education, and (iii) vocationalise the +2 stage of education effectively. It is incumbent on the central government to implement the same proposals in their own schools being set up now.

These vidyalayas are also being planned to strengthen national integration. Towards the latter objective, 20 per cent of the students of each vidyalaya are expected to migrate to another vidyalaya in a different language region. This migration is proposed to be between Hindi and non-Hindi speaking districts. In the Hindi speaking districts, the third language, to be taught compulsorily, will be the language of the 20 per cent migrating to the particular vidyalaya. This is indeed a novel feature of the scheme. The migration at the young age may create some difficulties, but the effort is very worthwhile and must be made. We should hope to succeed.

The work of teachers in the navodaya vidyalayas will be of a higher order and more strenuous in character. It will also call for a higher degree of competence on their part. To attract really competent teachers, who will naturally be drawn from the existing institutions, suitable incentives like better salary scales, special allowance, facilities for residence etc., will need to be offered. But what is of crucial importance in this connection is the selection of the principals. It is the principal who sets the tone of the institution, guides and encourages his teachers and raises the image of the school. The salaries of the principals of some of the good public schools in India are about Rs. 3,000 p.m. or more with free residence, free transport and some other facilities. In the case of the proposed schools too, a sufficiently high salary scale with other facilities of a reasonable order will be called for. Their number being relatively small, the financial implications will not be large, but their contribution to the success of the project will be so crucial that the money spent on them will pay good dividend. Without this provision, even the other expenditure on the scheme may not give full return.

The government is thinking of setting up a separate autonomous organisation to administer the navodaya vidyalayas. I think it will be economical, it will result in better co-ordination, and it should be preferable in other ways also to assign this scheme to Kendriya Vidyalaya Sangathan, another autonomous organisation under the same Ministry and dealing with similar schools of general education. It is not correct to think that this arrangement will bring too many schools under the management of one organisation, because in several states of India thousands of schools are administered by only one directorate of education. Further, in order to streamline the work of this organisation and to preserve the special character of the two categories of schools, the Sangathan can have two wings, one for each category, with adequate delegation of powers to the head of each wing. The Sangathan so re-organised can then well establish a machinery for regular inspection and guidance of all the schools in its charge, which machinery appears to be needed by the sangathan even for its present work.

Has the 11-Year Higher Secondary Pattern Failed?

The experiment of the 11-year higher secondary schools, which was launched to implement the recommendations of the All India Secondary Education Commission, has not succeeded. In fact, the multipurpose schools can be said to have failed. I will attribute six main reasons for this failure. First, the philosophy on which the pattern was based was ill-conceived. The bias towards work introduced through the practical streams—Technical, Agricultural, Commercial, Fine Arts and Home Science—doubly harmed the students: Secondly, the concerned establishments would not employ them because they were not fully trained to do the work and the professional institutions gave them no preference in admission because they wanted pupils who were strong in Basic Sciences and Mathematics; they claimed to teach the professional subjects in their institutions from the beginning. Thirdly, we blundered on the planning and implementation fronts because of lack of experience on our part. The Multipurpose Schools were commenced in 1955 but the Regional Colleges of Education (Ajmer, Bhopal, Bhubaneswar, and Mysore) to train teachers for them were started around 1965. Fourthly, the age of 13 or 14 at which the children had to opt for a particular stream commencing in class IX was too low for a sound judgment on their part. Fifthly, the scheme was initiated at a time when the salary scales of our teachers, particularly at the school stage, were extremely poor. The post-graduates who were needed to teach class XI were hardly available in many parts of the country, and those that were, preferred to join the more lucrative jobs rather than teaching. Finally, the long period over which the conversion of high schools to the higher secondary pattern was allowed to take place created its own difficulties. Dropping of the pre-university class, which was introduced as an interim measure, was later resisted successfully by the universities and private managements of colleges because of the authority and power which they wielded and due to likely loss of income through fees which the pre-university classes had been giving in good measure. A public examination introduced again at the end of class X of the higher secondary stage (classes IX, X and XI) to solve the difficulty of transfer of students from high to higher secondary schools depleted the enrolment in class XI and tended to make it economically non-viable, for most of the students preferred to join the pre-university class rather than class XI. Revival of a public examination at the end of class X also weakened the integrated character of the higher secondary stage and thus it did not permit achievement of a higher academic standard of education which was originally visualised.

The higher secondary schools of Delhi Territory, however, belonged to a different class. They were started several years before the appointment of the All India Secondary Education Commission. Even then, some of the problems of the 11-year higher secondary system were visible here as well. For example, some of the students or their parents and others complained of 3 years of the stage as too long a period. However, all the high schools in Delhi had been up-graded to the higher secondary pattern over a very short period; the University of Delhi readily agreed to give up the pre-university class; the post-graduate teachers were appointed in full strength because the relatively best salary scales at that time attracted to Delhi schools qualified teachers from nearly everywhere else in the country; and as a Union territory, Delhi did not suffer from financial stringency for education to the same extent to which several of the states suffered so that the laboratories, libraries and other inputs needed to enrich education were well-provided in most institutions. As a result of these factors, it can not be said that the academic standard in humanities and sciences in the Delhi schools was also as poor as that of the higher secondary schools everywhere else in the country. As regards the multipurpose schools, their establishment on any worthwhile scale had not been taken in hand when re-thinking about the 11-year higher secondary pattern commenced.

Philosophy and Purpose of the New Pattern

There are many considerations on which the philosophy and purpose of the 10+2+3 pattern of education seem to be based. Among these, the academic considerations may be given the highest weightage and may be examined briefly.

The first point to be considered on academic grounds is the stage or age at which a student should be deemed to be fit to enter the university system. In all the advanced countries of the world, a student entering the university is expected to be 18 years of age or more. It is only then that he can be adequately prepared for undertaking a course in higher education and also be mature enough to study on his own and to profit by the methods of teaching which are appropriate to university stage. This necessarily implies a total duration of at least 12 years for the school stage because the age of admission to the school system is or should be six years. At present, when total duration of school stage is only 10 or 11 years and age of admission to school system is 5 years or even less, very young students aged 14-16 enter the university system. They are really children who deserve to remain at school and continue to be taught by methods appropriate to school stage rather than young persons who are mature enough to profit by a course of higher education. This is bad for schools who lose in their stature by a cut in their total duration. It is bad for universities because it adversely affects their standards. What is even more important, it is not good for students themselves. If this situation is to be improved, it follows that total duration of the school stage (including elementary and secondary education) should be not less than twelve years.

The next question to be discussed refers to duration of the secondary education course. The duration of elementary education is eight years in some States such as Uttar Pradesh, and seven years in others such as Maharashtra. If total duration of the school stage is to be twelve years, it follows that duration of the secondary course would be four years in some states and 5 years in others. The All India Education Commission of 1966 had an open mind on this issue and did not insist on a uniform pattern of seven or eight years for elementary education. It was, however, very emphatic on one point, namely, secondary education should not form an integrated continuous course but should be broken up into two sub-stages: lower secondary and higher secondary. It further recommended that the elementary and lower secondary stages should cover the first ten years of school and that the higher secondary stage should cover the last two years. It is necessary to understand the reasons which led the Education Commission to make these recommendations.

The commission found that wherever the course of secondary education was made continuous and unbroken, as in the higher secondary schools of Delhi or Madhya Pradesh, two undesirable consequences followed. The first is that expansion of secondary education is much larger than necessary or desirable. This is because the principle of selective admissions cannot be introduced at the beginning of the stage (class IX) when the students are too young and because every student who enters the stage has to continue till the very end due to continuous character of the course. Such a system, therefore, prevents the student from leaving school at the end of class X although he would be eligible for admission to many vocational courses at this point. Secondly, continuous character of the course compels the students to decide upon his future career at a very premature stage when he is entering class IX and is about 13 or 14 years old. This is academically undesirable: and in fact Dr. D.S. Kothari has condemned it as a system of 'child marriage'.

Two more important points must be mentioned in regard to the proposed reorganisation of school education:

(1) In the old days, and even in the multipurpose school system, science and mathematics tended to be neglected. They were studied only till the end of class VIII, and thereafter the student had the option to omit them if he so desired. In many secondary schools, even the provision for teaching of these subjects, particularly science, did not exist. The net result was that more than 50 per cent of students at the secondary stage were deprived of basic education in science and mathematics. Adequate teaching of science and mathematics is essential in the modern world which is based on science and technology. It is equally necessary to improve the quality of education and to avoid the dangers resulting from a dichotomy of the 'two cultures' of science and humanities. Above all, a society like ours has to ensure vertical mobility to the manual workers, whether engaged in industry or agriculture. For this purpose, it must provide the necessary grounding in science and mathematics to every person as a part of his school education because, without this, vertical mobility is not attainable. The Education Commission, therefore, rightly recommended that teaching of science and mathematics should be obligatory till the end of class X.

(2) While a student should ordinarily be expected to decide whether he will go in for a vocational course or into the university

stream at the end of class X (when he is about 16 years of age), it goes without saying that such decisions would be tentative and that some young persons may like to change from one stream to the other at a later stage. The Central Advisory Board of Education, therefore, specifically recommended that such later transfers from one stream to the other should be permitted by due provision for transfer of credits on this account. The importance of this recommendation is obvious.

It has already been pointed out that even as early as 1919 the Calcutta University Commission had recommended that the course leading to the first degree should have a duration of three years. With the passage of time the opinion on the subject has now become even stronger for three main reasons. Firstly, there is now a much greater demand for specialisation on account of the explosion of knowledge and, at the same time, there is a demand for greater general education to enable the young persons to face successfully the complex societies of the modern period. Secondly, there is now much greater demand for inter-disciplinary courses and for provision of greater elasticity to students to choose subjects of study to match their individual capacities and interests. Thirdly, there is a greater emphasis on providing practical experience, opportunities for field work, and project-oriented studies at the under-graduate stage to improve standards of education and to bring the system of higher education in close contact with the community around through programmes of social and national service. If these important purposes are to be satisfactorily achieved, it is clear that a two-year duration is extremely inadequate for the under-graduate stage and that the new courses for the first degree will need a minimum duration of three years.

To sum up, the foregoing discussion will show that the new pattern of 10+2+3 for school and college classes is an educational reform of great significance, that it is based on important academic considerations, that it is definitely superior to the alternative patterns which now prevail, and that its universal adoption in all parts of the country will bring in several advantages among which the following may be mentioned:

(i) A broadly uniform pattern all over the country will facilitate movement of teachers and pupils and will strengthen national integration.

(ii) The proposed structure will rationalise and strengthen school education. This strengthening has been recommended by practically all committees, commissions and other organisations in our country.

(iii) It will send more knowledgeable and maturer students to the universities.

(iv) It will reduce pressure for admission on universities and other centres of higher education.

(v) It will provide a distinct stage (the +2 stage) to introduce appropriate vocationalisation of secondary education.

(vi) It will provide an opportunity and a means to modernise and strengthen school and college curricula and to restructure them on more scientific lines as well as to serve the social and economic needs of the adolescents and youth in a better manner.

(vii) A broadly uniform pattern in all States and Union Territories will facilitate implementation of educational programes, production of books and reading material and teaching aids, training of teachers, reconstruction of syllabi, and improvement in examination practices.

(viii) It will remove difficulties in the matter of education of children of the mobile population, which is continuously increasing in the country.

(ix) It will help to solve educational problems of the minorities at least in two ways: (a) the minority language books produced in one area can be easily used in all other concerned areas, and (b) schools adopting the minority languages as media of instruction in any State or Union Territory can be considered for affiliation to a Board of Secondary Education outside that State or Union Territory. The latter arrangement should reduce administrative costs and difficulties of some of the State Boards and Governments.

(x) It will do away with the criticism which is generally levelled against the present higher secondary system that the students are required to take a decision at too early an age about the particular stream to be joined by them.

(xi) It will contribute to raise the general standard and quality of education at all stages—school and university.

(xii) It will provide for a saving in the funds needed for expansion of education, particularly at the collegiate stage, so that more resources can be found to improve the quality of education.

Having said all this, I should like to point out that when the 10+2+3 structure was being debated in India in the sixties, one of the criticisms levelled against it was that even within the existing structures there is so much to do to improve the standard and quality of education that the change of structure should not be given a priority. Some of the parents and the general public are even now somewhat critical of our having undertaken too many changes in Indian education within a brief period since independence. They, therefore, do not wish to allow their children to be treated any more as 'guinea-pigs.' The decision to introduce the new pattern has, however, been taken because the balance of arguments is in its favour.

Some Misconceptions

In spite of all the academic and other considerations in favour of uniform adoption of the common pattern of 10+2+3 for school and college classes, it is really unfortunate that there are some misconceptions on the subject which may interfere with proper implementation of the programme. It may be necessary to clear these misunderstandings if the programme is to succeed.

There is a tendency in certain quarters to regard the arithmetic of the pattern as more important than the substance of the reform which consists of vocationalisation of the higher secondary stage and improvement of educational standards. We should not look at the proposal of adopting a new pattern of school and college classes on a uniform basis throughout the country either as an arithmetical problem or even as a purely structural issue. We must regard it as a fundamental educational reform for strengthening both the school and university stages of education and for making the secondary stage terminal through a programme of vocationalisation. If these basic objectives are not emphasised from the very beginning and necessary steps are not taken to achieve these objectives, a mere change in the structure will not serve any useful purpose. It will be the repetition of a wasteful exercise only.

Another common misconception is that in adopting a common pattern of school and college classes, we must look elsewhere for precedents and support our argument with illustrations from other countries. This is hardly necessary and in fact would be an incorrect procedure. There is no uniform pattern of school and college classes in different countries of the world and not even in the socialist countries whose educational systems tend to be uniform. Each country has evolved its own pattern in accordance with its own peculiar circumstances. It is, therefore, not desirable to change our pattern on the basis of the patterns prevailing in other countries. We must outgrow this imitative attitude and should introduce changes in our pattern on the basis of our own indigenous thinking after taking into account what is happening outside but without being dominated by it.

Yet another misunderstanding, which is sometimes propagated by certain vested interests, is that the adoption of the new pattern will adversely affect the interests of teachers. Nothing can be farther from the truth. The school teachers have everything to gain by the adoption of the pattern because more posts will be created at school stage at higher levels. Even the college teachers have nothing to lose because it has been expressed that in spite of a temporary setback in enrolment, there should be no retrenchment. The setback in enrolment also will be more than made up in two or three years by the natural increase in enrolment that is taking place each year. What is even more important, the teachers in higher education will have much better job satisfaction because of the qualitatively better students that will now be entering the university system.

There is also a misunderstanding that the new structure can be introduced overnight. This is not correct, for necessary preparation has to be made and advance action taken if the programme is to succeed and to result in improvement of educational standards. A revised syllabus and new text-books have to be prepared and orientation of existing teachers and preparation of new teachers, particularly for the higher secondary stage, have to be properly organised. A good deal of preparatory work is also needed to identify vocational courses appropriate to the secondary stage, to work out fairly reliable estimates of manpower needs or employment opportunities at middle level, to prepare the curricula and to set up the essential institutional structures for vocationalisation. This is the experience of all those States and Union Territories and other areas where the new structure has been introduced.

2

EDUCATION FOR NATIONAL INTEGRATION

In the previous chapter we have stated that a broadly uniform pattern of education all over the country will give rise to several advantages including national integration. This integration, in the special context of our country, is so important that we may consider the matter in some detail.

What is National Integration?

As a concept, national integration means the basic oneness of the country. It is the sense of identity and solidarity among all citizens of the nation.

Emotional integration is an important and major component of national integration. Both may even be treated to be identical in so far as the educational process is concerned. Some idea of emotional integration can be obtained from a speech delivered by Pandit Jawaharlal Nehru in October 1955, at Bangalore. The relevant extract, which is stimulating to read, taken out from that speech is quoted below:

> "We should not become parochial, narrow-minded, provincial, communal and caste-minded, because we have a great mission to perform. Let us, the citizens of the Republic of India, stand up straight, with straight backs and look up at the skies, keeping our feet firmly planted on the ground, and bring about this synthesis, this integration of the Indian people. Political integration has already taken place to some extent: but what I am after is something much deeper than that—an emotional integration of the Indian people so that we might be welded

into one, and made into one strong national unit, maintaining at the same time all our wonderful diversity."

It must be stated that integration in a social group is not synonymous with rigid uniformity or total absence of variety. It does not mean a patchwork of similar traits. It does not imply a dull, colourless sameness in all respects. Unity is not uniformity. No one need be required to give up his faith in the religion of his father, his love for the language which his mother taught him, or his pride in the lives and achievements of the great men and women who lived and worked in the part of India he himself lives in. Such faith, love and pride is legitimate and understandable. Such loyalties do not detract from loyalty to the nation; rather they may add depth to it and, in turn, derive meaning and significance from that overall loyalty, which is the nation's due.

National integration is not a negative concept. While allowing for differences in language, race, religion, etc., it is opposed to social disruption and chaos. It implies respect to all creeds, faiths and ways of life and does not conceive of any one of them to thrive at the cost of the other. Thus the concept of integration, like the concept of secularism, is positive. It does not permit prejudices to grow. It fights them as a healthy organism would fight diseases.

We are an independent nation, but it is well-known that nationhood is not merely a product of geography or politics. To be strong, the nation must have a solid basis in the mind of each of its citizens. In a democracy, the members of the society must be citizens; and citizenship is possible only when the individual feels completely integrated with the whole, of which he is a part. The State must not be an amorphous mass but an organic entity.

The Forces of Disruption

The Indian people constitute a multi-racial, multi-religious and multi-lingual nation. We have made considerable progress in several directions, since the independence of the country, but we have yet to go a long way. These and other facts give rise to certain disruptive forces which might include the following:

(i) Mis-directed religious, linguistic or regional loyalties;
(ii) Imbalance in economic development in different parts of the country;

(iii) Gap in the socio-economic development among different strata of the society;
(iv) Absence of a fully accepted and operative *lingua franca* in the country;
(v) Indiscriminate imitation of the western manners, behaviour and mode of living.

It should not, however, be imagined that national integration is non-existent in India or that Indian society is in a state of complete disintegration. It is true that attention was first directed to the subject when there had been outbreaks of violence, communal frenzy, and linguistic madness in certain parts of the country. But these episodes, tragic as they were, did not prove that the country as a whole was not functioning as an integrated nation. They only emphasised the need for bringing about a greater degree of integration than already existed, and for ironing out such factors in our national life as might, in certain circumstances, exacerbate feelings among sections of the population, create misunderstandings, and thus prevent the country from trying to meet the gigantic challenges facing it. Such factors are not unique to Indian society. They are present in one form or another in most other large agglomerations of human-beings composed of individuals belonging to different religions, nationalities, races and linguistic groups.

The Unifying Factors

In spite of the forces of disruption, there are a large number of factors which unify us into the Indian nation. Some of these factors may be mentioned:

(i) Our history, culture and emerging value-system;
(ii) The economic development;
(iii) The growth of industries;
(iv) Spread of education and enlightenment;
(v) Impact of science and technology;
(vi) Increasing mobility of the people;
(vii) Effort towards removal of social and regional inequalities;
(viii) All India approach to planning and development.

Nationhood has a strong psychological basis. If political, social and other events convey different meanings to different groups, they may continue to be a source of dissension and disintegration, unless the people are helped to see them in their proper perspective and made to realise that they are warnings from the past rather than guides to thought and action in the present. The most sensible of human-beings are apt to be carried away momentarily by uncontrolled emotions and liable to commit acts which can only lead to a life-time of remorse. It is necessary to sublimate such passions and canalise the energy they carry in directions likely to be serviceable to the body politic.

There is ample evidence for the fact that national integration in our country is not so acute a problem as is sometimes made out. We may recollect how we behaved during our struggle for freedom, at the time of the Chinese attack on India in 1962, the clash with Pakistan in 1965, and the Indian involvement in the Bangladesh war of independence in 1971. During these incidents, the country witnessed, though temporarily, a high degree of national unity. The presence of an enemy makes people rise above petty considerations. It makes them search for their oneness. But it does not afford a positive and lasting basis for integration.

It should be mentioned that creation or support of the unifying factors is not the responsibility of the Central or State Governments alone. It is the individual as well as collective responsibility of all citizens—politicians, educationists, artists, writers, teachers and students, parents, intellectuals, businessmen, trade union leaders and others.

Role of Education and Educational Institutions

As for a positive and stable basis for national integration, the educational system and educational institutions have an important role to play. They can help the nation achieve a sense of identity and solidarity. Since education helps in making an individual autonomous in the sense that he is able to understand various issues, seek information on them without intermediaries and deal with them intelligently, equality of opportunity should be given the highest priority in educational development. A large section of the population, particularly those belonging to the minority and backward groups are still outside the reach of education. They are unable, for various reasons, to take advantage of the educational opportunities which are already available. Consequently, many of these sections remain outside the mainstream of national life and are unable to participate effectively in national affairs. Universalisation of elementary education coupled with the supportive programme of adult education and emphasizing the development of competencies which enable an individual to function as an intelligent and productive citizen should receive importance. Efforts should, in this connection, be made to remove the impediments which prevent women, scheduled castes and scheduled tribes as well as other economically backward groups from having equal access to the educational opportunities.

With a view to breaking down the distinction which exists between those who work with hands and those who are supposedly expected to use their brains, socially useful productive work must become an essential ingredient of education at all levels. In fact one of the major objectives of Basic Education was to promote, through participation in productive activities on a cooperative basis, an understanding among various groups and build a social climate where dignity of labour was charished and not despised.

The curriculum of educational institutions should emphasise the cultural heritage of the country which is characterised by unity in diversity and to which various communities and religions have significantly contributed. The teaching of history, geography and other social sciences assume particular importance in this regard. While the study of differences and divergence in approaches need not be suppressed, it is desirable to deal with them in a broader social and political context which characterised particular periods of the development. The National Council of Educational Research and Training ahs brought out illustrative guidelines for the teaching of a few subjects.

It should be mentioned in this connection that instead of promoting acquisition of information, education should aim at developing the capacity to think critically. From this point of view, the methods of teaching assume significance. (We shall discuss this matter in a separate chapter).

While it is necessary to develop curricula which meet the specific social and economic needs of certain communities, it is important that a broad uniformity exists in education which is provided in different parts of the country. The adoption of the 10+2+3 pattern of education is thus one of the important measures for bringing about uniformity in the educational pattern and standards. The "Curriculum for the Ten-Year School: A Framework," which the National Council of Educational Research and Training developed, had emphasised national integration as one of the major objectives to be achieved through education. The Framework stated: "National integration could be achieved only through a proper understanding and appreciation of different sub-cultures of India and the common bonds that hold them together. Discrimination of any kind based on sex, caste, religion, language or region is to be looked at with aversion because it is irrational, unnatural, and harmful to the growth of modern India. All subjects should be taught in such a manner as to foster the spirit of scientific humanism."

It must, however, be stated that the educational institutions are places of learning whose work conforms to the needs of the society. The scope of their work and their role have unfortunately not been spelt out in very clear terms. They are evolving gradually. Two of the functions of the educational institutions are to keep the society in proper shape for change and to equip the individual with useful skills and knowledge. The first seeks to acquaint the pupils with national traditions and to make them look ahead in order to enrich them. This may be a by-product of good education, but it is advantageous to make a conscious effort in this direction, particularly at the school stage. A reference in this regard may be made to recommendations of the Gajendragadkar Sub-Committee (1968) of the National Integration Council. The sub-committee observed:

> "Education from the primary to post-graduate stage should be reoriented, to : (a) serve the purpose of creating a sense of Indianness, unity and solidarity, (b) inculcate faith in the postulates of democracy, and (c) help the nation to create a modern society out of the present traditional one."

It is the children in school today who will be the citizens of tomorrow. It is from among them that we will get the leaders of the future. It is the universities and other institutions which will produce our top engineers, doctors, lawyers, administrators and others who will occupy positions of authority in the country. With the education which they get, they can bring about changes in the society. An educational institution has, therefore, to accept its share of responsibility in promoting national integration. In its turn, the leaders in the society should acknowledge their responsibility to support the efforts in this direction made by the educational institutions and its teachers.

The same thing can be said differently. We all know that there are forces in and around an educational institution which may not be conducive to the development of the ideals of national identity and solidarity. Somebody may even argue that the forces of disintegration outside the educational institutions operate so actively that the effectiveness of the work of the teacher is likely to be negated by external forces. There may be weight in this argument, but this should not lead to despair. To fight against such disruptive forces, the teacher should have courage and hope and, most important of all, should practise in and outside the classroom a behaviour which helps integration.

Role of Teachers

Teachers all over the world have helped in social reform. They have to inculcate in the young minds in their care a set of values and attitudes which are essential for the growth of a nation from traditional to modern. In order to provide education for national integration, the teacher should bring home to his pupils, whenever the occasion arises, the basic oneness of the country. It is not suggested that for this purpose he should resort to deliberate falsehood or distortion of facts as, for example, in teaching history, languages, social studies, humanities in general or the Indian contribution to science and technology. What the teacher needs to emphasise is truth and objectivity. He should give correct information and interpret facts, wherever necessary, keeping the objectives of national integration in view. In other words, the emphasis should always be on the desirability of functioning and acting as a single and united country.

It is important to mention that every teacher should have the following specific understandings while teaching any subject whatever:

(i) The Indian nation is composed of people who follow different religions, speak different languages and have different ways of living. In spite of all these differences, they are citizens of the same country and enjoy equal rights. Hence, all that unites us needs to be emphasised and all that divides us ignored.

(ii) The Indian society is on the march towards transforming itself into a democratic, secular and modern nation without sacrificing what is still valuable from the past. This is to be achieved through the building up of a developed and self-generating economy, by routing out poverty and ignorance and by bringing about a just social order. This tremendous task can be accomplished only through the united effort of all the people.

(iii) The people of India are sovereign and masters of their destiny. Their heritage is common, and their problems are common. The latter can be solved only by developing among the people an attitude of love and respect for each other. The development of any part of the country should therefore be, considered as the development of the whole country. A part of the nation cannot develop in isolation of or in conflict with the rest of the country. We all live if the nation survives.

It must be added that national integration like moral education is not a subject on which specific lectures can be delivered to the pupils. The teacher need not have to devote separate teaching periods to clarify the concept of national integration. While teaching any subject, he has to present the facts, as they emerge, in such a manner that parochial attitudes are not bred, that growth of hostility is avoided and that the advantage of functioning as a mature nation becomes self-evident. A guarantee to the inculcation of national integration among the students can be secured through the teachers themselves practising the same values sincerely and demonstratively. This is however, difficult because the teachers also come out of the prevalent social order and even then they are required to ensure that their pupils are not allowed to fall victim to narrow prejudices. This makes the situation very challenging for them. It, in turn, throws considerable responsibility on the teacher-training institutions and the managements of private and denominational educational institutions.

What has been said for the teachers of any educational institution should apply with greater force to the teachers of teachers. In fact, there is justification for incorporating education for national integration as an element in the syllabus of all the teacher-training institutions in our country. What is proposed to be said now for the adults in general should apply with special emphasis on the managements of private and denominational schools, colleges and other educational institutions.

Role of Parents and Others

Before the child is enrolled in an educational institution, it is completely under the influence of its parents, neighbours, relations and the general community. There are also the most formative and, therefore, receptive years in the life of the child. It is at this stage that the healthiest seeds of national integration should be sown in the mind of the infant child. The influence of the parents in particular and the adults in general on the younger generation is important otherwise too. For bulk of the time every day and night the growing child lives and develops under the influence of the adults in the community. If a child happens to be under the influence of divisive forces operating in his environments, it makes it rather difficult to inculcate a sense of unity and oneness in his mind while he is in an educational institution.

If the parents and others criticise the religions, languages, customs, manners, etc., of others and boost their own, they only contribute to disintegrate the society. What is being occasionally talked about and has even been observed is that some of our political leaders are also not quite free from coming under similarly undesirable influences. In some cases elections are understood to have been fought on communal religious or even sectarian considerations. Thus in order to achieve a short-lived gain a long-term venom of disintegration is injected in the body politic.

In the context of the multi-racial, multi-religious and multilingual character of the Indian society, it becomes the bounden duty of every adult not to pull down through words, writing, action or even expression, the religions, languages and other value-systems of any person, whatever. In fact, a more practical approach to the matter would be for each person to appreciate in definite and positive terms the faiths, customs, manners and practices of all persons who belong to religions, languages, etc., other than his own.

I observed in the U.S.A. during the fifties a large scale programme of parents' education. The number of couples, in which both the husband and the wife were working for some organisation or individual, was observed to be increasing at a fast rate. In the interest of family happiness, it was considered inescapable to give education to both the parents (and would-be parents) about their responsibilities to look after the young children. A programme of parents' education was accordingly launched. It included even such elements as how to lift an infant child without dislocating his bones and how to bathe or feed him in a scientific and hygienic manner. The implication was that these needs of the newly born child could be attended to by the mother or the father whosover was present in the house at the particular time. Although education in the U.S.A., as in India, is a constitutional responsibility of the State governments, the programme of parents' education was financed by the Federal government. Education of parents having become a national necessity, the Federal government offered to find funds to operate the programme.

In India too a similar programme of education for national integration can be launched. Ours will undoubtedly be a more difficult programme to organise and our results may be slower to emerge; because our programme will be directed towards a change of attitude in the concerned individuals unlike the giving of some simple information and training in the case of the programme of parents' education in the U.S.A. We can take up the programme directly as an integral activity under our schemes of adult education or extension education through the colleges and the schools. And what is more important, we can exploit the expanding media of non-formal and informal education.

Role of Text-Books, etc.

When we talk of education for national integration, the role of text-books particularly and other literature generally cannot be ignored. In developing countries like India the books still constitute the most important source of information and of building attitudes. In the case of children specially, the books can create a far-reaching impact in so far as integration or disintegration is concerned. It is, therefore, necessary that every effort is made to ensure that the text-books do not contain material which is prejudicial to the promotion of a feeling of oneness among the children. The authors of text-books and other literature are all adults. They have to take extra care in writing on such topics (or in interpreting them) which have a more direct bearing on national integration. In this connection, a scheme of orienting the authors should also be considered.

We are adopting the various regional languages as media of instruction at all stages of education. Educationally, this is a very sound policy. But this will discourage mobility of pupils and teachers, which in turn will weaken integration unless counteracting measures are taken. At the stage of higher education this mobility is important even from the educational point of view. Continued use of English as medium of instruction is no solution. English language is important for us and should be taught well. But it is incorrect to think that English has been or is an integrating force in India, this has only been imposed on us by a foreign rule as the working language of administration and is, therefore, confined to very few people at the periphery of the nation. Hindi is taking time to serve the all-India purpose. To encourage mobility of teachers, pupils and others from one region to another, universities and other institutions should organise short language courses. By using language laboratory and other modern techniques of language-teaching, any Indian language can be taught to a literate person within a short time. Under a scheme tried out by the Post-Graduate Deccan College, Poona, working knowledge in Hindi could be given to American adults in about 20 days by spending about 5 hours each day. I have personally seen the scheme succeed.

Several other methods could also be adopted by our educational institutions and other agencies to bring the various Indian languages and religious and cultural patterns nearer each other. These will go a long way to strengthen national integration.

It will be agreed that the institution of sports and games can also be developed as another powerful medium for education towards national integration. The sportsman's spirit is classical. The fellow-feeling among members of a team and even for the opposite team is well-known. On the field, a sportsman forgets the race, nationality, regionality, religion, language or any other differentiating characteristic of the players participating in the game. It is notable that even the objective of defeating the opposite team or the individual is not associated with any ill-will whatever. In India, therefore, there is a strong case for giving greater encouragement and support to games and sports at various levels through educational institutions and otherwise. This will be good for both education and national integration.

The same is true of co-curricular activities too. They constitute an important channel to develop healthy attitudes among the students by promoting cooperative enterprise based on common goals to be achieved by joint effort. Such activities should include the youth leadership camps, social service projects and national integration camps.

Role of the State

The state or the government also has an important role to play in the area of integration. It can provide for, through an efficient administrative machinery, excellent law-and-order situation and thus keep the disruptive forces and anti-social elements under control. Prompt attention to grievances and representations of the people and their quick and satisfactory disposal by the authorities reduces the mental and emotional tension in the population. Through its machinery of planning and implementation as also through appropriate and timely measures for economic development and social welfare the state can minimise regional imbalances and economic disparities and thus strengthen the unifying factors already referred to in this chapter. The state can also organise studies and surveys to discover the factors leading to tension and disruption and to find possible solutions for the same. It can further make a contribution in the same direction by implementing the relevant recommendations satisfactorily.

It may be mentioned in this connection that a National Integration Council was set up by the Government of India in 1961 under the chairmanship of the Prime Minister. This was a large and high-powered body, and its objective was to find ways and means to combat the evils of communalism, casteism, regionalism, linguism and narrow-mindedness. The council was again revived in 1980. But the follow-up of the council's work seems to have been done more at the political level.

Matters connected with emotional or national integration have been studied in some depth by the National Committee (Dr. Sampurnanand Committee) on Emotional Integration in 1962. Such matters relating to school education were looked into further by a panel on National Integration set up by NCERT (National Council of Educational Research and Training). I had the privilege of administering the National Committee on Emotional Integration on behalf of the Union Ministry of Education and of being a member of the National Integration Panel. It may be relevant to draw attention to some of the more pertinent recommendations made by each of these bodies.

National Committee on Emotional Integration

(i) It is necessary to evolve an effective policy in education, the implementation of which will bring the States and Union Territories closer to each other.

(ii) There should be a common pattern of education in the country, which will minimise confusion and co-ordinate and maintain standards.

(iii) The Government of India should take necessary steps in consultation with the State governments and other authorities to create a pool of competent and experienced educationists and educational administrators, from which the States and the Centre can draw upon for their additional requirements.

(iv) The use of the Roman script may be permitted in certain areas for an interim period to enable persons to improve their acquaintance with Hindi. Throughout India the international numerals must be used. To reduce the burden of three scripts, Hindi may be learnt in the non-Hindi areas in the regional script. At the high school stage Hindi must be taught in the Devanagari script, keeping in view the constitutional provision.

(v) The two link languages—Hindi and English—should be effectively taught at university level so that conditions of emotional and intellectual isolation are not created.

(vi) Schemes to provide continuation of education should be taken up to cater to those children who for reasons of economic necessity leave school between the ages of 11 and 14.

(vii) It is desirable to have a uniform for school children.

(viii) Children should be taught to sing the national anthem in unison and behave in a disciplined way when it is sung.

(ix) National Days—January 26, August 15 and October 2—should be celebrated by schools, with full participation of the teachers and the community.

(x) Special meetings of the school assembly should be held at the beginning of each term. At these meetings children should take a pledge of loyalty to India. The pledge should be of an all-India character.

(xi) The Government should encourage children to go on excursions outside their States.

(xii) If universities are to play an effective part in providing leadership and fostering the necessary climate for emotional integration, they must maintain uniformly high standards through a judicious basis of admission, and recruitment of staff on the basis of academic qualifications, character and personality.

(xiii) Provision of proper leisure-time activities for college students is essential and should be expanded to cover the entire university population.

(xiv) University students should increasingly participate in social service programmes and work camps so that they can acquire some training in service to the community.

(xv) The selection of teachers on the basis of caste and community should, on no account, be encouraged and universities must make a determined effort to fight casteism and communalism in all their manifestations.

(xvi) Caste or communal hostels should not be permitted. Where separate hostels have been built for Harijans out of funds set apart for their welfare, a certain percentage should be set apart for non-Harijans.

(xvii) The use of Indian languages as the media of instruction from the lowest to the highest stage of education is a matter of profound importance for national integration.

(xviii) It is necessary to have adequate motivation for adult education programmes which should, therefore, be linked with occupational interest of the people.

(xix) Although it is not possible to provide religious education as a part of the curriculum for schools in a secular State, education will be incomplete if students are not helped to appreciate the spiritual values which the various religions present to the people.

(xx) History and geography text-books, as the subjects demand all-India treatment, should be centrally produced.

(xxi) Text-books especially in languages and the social studies imported from abroad for use in India should be screened. Care should be taken to see that no books are suggested for schools which lead to bias or the creation of stereotypes.

National Integration Panel

The work of the panel is continuing. Some of its recommendations mentioned below are, therefore, yet to be given a final shape :

(i) Text-books and other educational literature prepared at the national level should be translated in all the regional languages and steps taken to see that these are made readily available in the market.

(ii) It is necessary to develop a scientific temper through the teaching of popular science in our schools. This scientific temper is a creator of values and will go a long way in building common bonds among our diverse people. It is an essential part of secularism.

(iii) NCERT may identify suitable centres of cultural activities such as dance and drama or important Yuvak Kendras in different parts of the country where teachers and students can be sent for training to bring about a better appreciation of our arts and to promote cultural integration.

(iv) Text-books in exact sciences such as mathematics, physics, chemistry and biology prepared by NCERT at the national level should be adopted by all the States to ensure common standards and approaches all over the country.

(v) Text-books in social sciences namely, history, geography, civics and social studies at the secondary school stage prepared at the national level by NCERT should be adopted by all States with minor local variations.

(vi) At the lower level there is need for greater local colour and variations reflecting local and regional situations and social and physical environments and culture. Even in this task the States should seek the assistance of NCERT.

(vii) Adoption and adaptation of text-books needs to be further supplemented by the preparation and wider use of teacher's hand books or manuals accompanying the text-books.

(viii) The NCERT should prepare an annotated bibliography of suitable books already available in the market so that the States might be able to approve of them for purchase by every school library.

(ix) A common syllabus and text-books all over the country in order to achieve common standards also presume common educational qualifications of the teachers.

(x) Teacher education for national integration is yet another very crucial area in which the NCERT could play a leading role.

(xi) Common teacher training programmes throughout the country might be developed from the point of view of national integration.

(xii) Implementation of the three-language formula is another area where the State governments have yet to do a lot of work more effectively and with greater determination.

(xiii) Schools should be provided with copies of patriotic songs from other Indian languages by using the system of transliteration. Students should be required to sing such songs in chorus.

(xiv) So far as the text-books for minority communities are concerned, the States generally find it difficult to select, prepare or publish suitable books for their children. In such cases, the States should either allow their minority schools to affiliate themselves to the boards of their respective languages in other States or they should undertake to prepare and supply books in all the minority languages under their jurisdiction.

(xv) The states should also take full responsibility of training teachers in the minority languages.

(xvi) More schools on the pattern of Kendriya Vidyalays should be opened. In this case, the finances of the schools might be shared both by the Central and the State governments.

In implementing the above recommendations, which mostly pertain to the area of policy, planning, and financing, the State has a basic role to play. The State may find it difficult to implement everything immediately because of the constraints of financial resources. But that should not deter us—the teachers, parents and other adults—to discharge our own responsibilities in strengthening national integration. Many such responsibilities are independent of the State and do not cost money.

3

EDUCATIONAL STRUCTURE IN STATES AND UNION TERRITORIES

Previous Structure of Education

As stated before, one of the more important purposes of the new pattern of education has been to bring about a broad uniformity in education all over the country. It is not that there is something unique or very special about the 10+2+3 pattern through which alone the desired uniformity can be achieved. Any other pattern, for that matter, if successfully introduced all over the country, can produce the same result. However, the determination, the enthusiasm and the vigour with which the Central government had chosen to introduce this pattern had raised great hopes. It has. therefore. been expected that all the States and Union Territories in the country will soon have the same pattern of education. An opinion can nevertheless be held that India is too large and complex a country for introducing a uniform pattern. But based on past experience, particularly after the independence, the public opinion has been growing in favour of a broad uniformity at least insofar as the scheme of school and college classes is concerned. It has been considered desirable by one and all that for national integration, which in itself is a great objective such a uniformity is highly desirable.

Before introduction of the new pattern, various States and Union Territories in India were following different patterns. All of them could broadly be divided in two groups. The first group consisted of States and Union Territories where a period of 15 years or more was required to obtain the first degree in general education, and the second group consisted of those areas where the same degree could be obtained in 14 years. These two groups and the structures under each group were as follows:

THE 15-YEAR GROUP

Andhra Pradesh	(10+2)+3
Assam	(12+1 or 13)+3
Bihar	(11+1 or 12)+3
Gujarat	(11+1)+3
Karnataka	(10+2)+3
Kerala	(10+2)+3
Nagaland	(12+1)+3
Maharashtra (Western Region including Bombay City)	(11+2)+2
Meghalaya	(12+1)+3
Orissa	(11+1)+3
Tamil Nadu	(11+1)+3
Arunachal Pradesh	(12+1 or 13)+3
Goa	(11+2)+2 and (11+ 3) (one school only)
Pondicherry	(11+1)+3

THE 14-YEAR GROUP

Haryana	(10+1 or 11)+3
Himachal Pradesh	(10+1 or 11)+3
Jammu & Kashmir	(10+1 or 11)+3
Madhya Pradesh	(11)+3
Maharashtra (Marathwada and Vidarbha regions)	(10+1 or 11)+3
Manipur	(10+1 or 11)+3
Punjab	(10+1 or 11)+3
Rajasthan	(10+1 or 11)+3
West Bengal	(10+1 or 11)+3
Uttar Pradesh	(10+2)+2
Tripura	(10+1 or 11)+3
Andaman and Nicobar Islands	(11)+3
Chandigarh	(10+1 or 11)+3
Delhi	(11)+3

It will be noted that except the State universities of Uttar Pradesh and the University of Bombay, the degree course everywhere else was of 3 years' duration. With the introduction of the new pattern of education in Maharashtra, the University of Bombay also changed over to the 3-year pattern. In the Central universities of Aligarh and Banaras also, located in Uttar Pradesh, the degree course was of 3 years. It was observed that the pattern of high/higher secondary education varied widely in different States and Union Territories. Its total duration ranged from 10 to 13 years, and it was divided into recognised educational stages in different ways. Thus, the picture was complicated and confusing in the whole country.

The Latest Position

I tried to find out the latest position (year 1983) in this regard. The steps taken by each State or Territory to switch over to the new pattern of 10+2+3 are summarised in the table at the end of this chapter. The paragraphs which follow here briefly elaborate the same position.

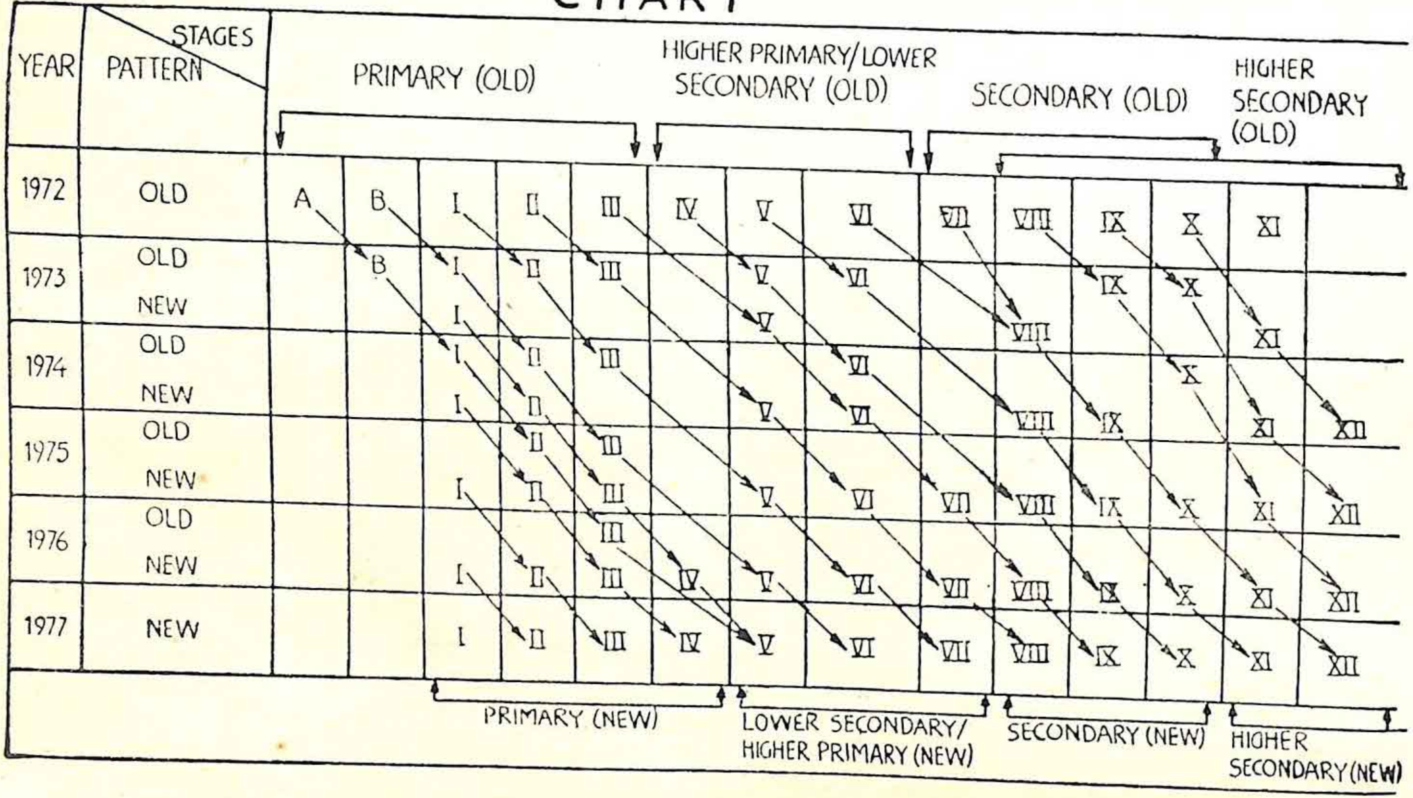
ANDHRA PRADESH

In Andhra Pradesh, the introduction of 10+2+3 structure was completed by the end of the academic session 1970-71. The government has since been trying to consolidate the various steps in this direction and planning to introduce appropriate vocational courses at the +2 stage. As an interim measure the higher secondary stage has been permitted to be attached to both the schools and the colleges. But it has, as a matter of policy been decided to have this stage ultimately in separate institutions only which have been named as junior colleges. A separate Board of Intermediate Education has been set up. This board formulated new courses for the plus two stage and introduced them. The universities of the State were duly involved in this matter, and they in turn also revised and upgraded their courses as is shown in the chart.

ASSAM

The Government of Assam decided in June 1972, to switch over

CHART


YEAR
STAGES
PATTERN
PRIMARY (OLD)
HIGHER PRIMARY/LOWER SECONDARY (OLD)
SECONDARY (OLD)
HIGHER SECONDARY (OLD)
1972
OLD
1973
OLD
NEW
1974
OLD
NEW
1975
OLD
NEW
1976
OLD
NEW
1977
NEW
A
B
I
II
III
IV
V
VI
VII
VIII
IX
X
XI
XII
PRIMARY (NEW)
LOWER SECONDARY/ HIGHER PRIMARY (NEW)
SECONDARY (NEW)
HIGHER SECONDARY (NEW)

to the new pattern of 10+2+3 ; and it introduced the same from first January 1973. In order to expedite the changeover from the 16-year pattern to the 15-year pattern, certain school classes were telescoped. In class V, from 1st January 1973, there were two sections in each school. One of these sections consisted of students who were promoted from class IV and the other of those who came direct from class III. For the latter category of students, there was an accelerated programme of instruction which was to be spread over 3 years, so that at the end of class VIII the students who dropped one class would come at par with students of the other category. Similarly, in class VIII, from 1st January 1973, there were two sections in each school. The students passing both classes VI and VII at the end of 1972 were promoted to class VIII. Provision was made for an accelerated programme of instruction for those who came from class VI. Necessary syllabi and text-books to suit the new classes V and VIII were prepared and introduced. Thus the change-over to the 12-year school was to be completed in 1977. A graphic picture of the manner in which some classes have been telescoped to meet the requirements of the new educational structure in the State is given in the chart.

From 1 July 1972, a 2-year P.U.C. was also introduced in Assam. The state government is reported to have taken a policy decision that the 2-year stage, i.e. the new classes XI and XII, should be located in schools. But keeping in view some practical difficulties, these classes were in the beginning allowed to continue in higher secondary schools as well as colleges by maintaining the *status quo*. The Assam Board of Secondary Education, to which the higher secondary classes were to be affiliated, had resolved that till it finalised its own syllabi and text-books, the P.U.C. syllabus and text-books as prepared by the two universities (Gauhati and Dibrugarh) would be adopted for the new higher secondary classes XI and XII. The board was to conduct an examination at the end of class XII when the new XI and XII classes were located in the schools. In view of the enlarged responsibilities of the board, a full-time chairman was appointed in place of the D.P.I. who could work as the chairman on part-time basis only.

BIHAR

The State government is reported to have introduced the new pattern from the academic session 1979-80. It was however, understood to be in favour of retaining all the 11 classes of its high schools by converting class I into a pre-primary class and renumbering classes II to XI as classes I to X. Introduction of a pre-primary class deserves to be commended, for it will specially help young children of the backward communities and the first generation learners and it will contribute to raise the standard of education in the State. It is hoped that necessary funds for the purpose have been made available.

GUJARAT

The question of the revised pattern was discussed in a joint meeting of the State Advisory Council of Education and the State Advisory Council for Higher Education in June 1972. The consensus in the joint meeting was in favour of acceptance of the 10+2+3 pattern. The joint meeting recommended the appointment of a committee to work out details of the pattern. Accordingly, the Government of Gujarat appointed in January 1973 a committee under the chairmanship of the State Education Secretary, to study the problem of the 12-years school pattern and make recommendations to the government.

As one of the measures towards the introduction of the 10+2+3 pattern in the State, the Government of Gujarat revised the syllabus for standards I to VIII. The latter syllabus was introduced in the academic session beginning in June 1973. The first S.S.C. examination under the 10-year system was held in March 1976. Accordingly, the +2 stage was introduced in the State during the academic session 1976-77 and the first public examination at the end of +2 stage was given in March 1978. Vocationalisation of the +2 stage is yet to follow.

HARYANA

The Government of Haryana had set up a committee to examine introduction of the 10+2 pattern and vocationalisation of higher secondary education in the State. The government then accepted the new pattern in principle and decided to introduce it in the new class IX from the academic session 1978-79. This introduction was, however, done in 1981-82.

HIMACHAL PRADESH

The Government of Himachal Pradesh had also set up a committee under the chairmanship of their Education Minister to go into details involved in the introduction of the new pattern of education in the State. The government then accepted the pattern in principle and decided to introduce it in the new class IX from the academic session 1978-79. This intoduction was, however postponed. The +3 stage is already operative there.

JAMMU AND KASHMIR

The Government of Jammu and Kashmir had appointed a committee under the chairmanship of Shri Bhagwan Sahay, the then Governor of the State, for re-appraisal of the ongoing educational policies of the State. According to the recommendations of the committee, the primary and middle school education should cover a period of 8 years (classes I to VIII) and the secondary stage of education should be spread over 4 years (classes IX to XII). The committee recommended that the secondary schools should be of 3 types:

(a) vocational schools which should have a course of 2 years,
(b) general schools which should provide education in classes IX and X, and
(c) full-fledged secondary schools having classes IX to XII.

This involved the transfer of P.U.C. from colleges to secondary schools. At the university stage, the committee recommended that there should be an Honours course of three years and a pass course of two years. A number of vocational subjects were also required to be introduced in the pass course to prepare students for different walks of life.

This pattern was introduced in class IX of the State in the year 1974-75 and the first public examination at the end of the new class X was taken in the year 1976. The +2 stage in the State has been introduced in selected high schools only. As regards the +3 stage, an Honours course of three years' duration has been introduced in both universities of the State. In order to help in raising the level of instruction at the +2 stage, groups of new higher secondary schools have been attached to the neighbouring degree colleges. The principal and staff of each degree college are required to supervise and help the academic work at the +2 stage of the higher secondary schools attached to their college. This innovation, which deserves to be recommended, can be taken to be an extension of the concept of school complexes to the degree colleges.

Consequent to the introduction of the new pattern of education, the State government was understood to have decided in principle that all gazetted posts in the government and every admission to vocational courses like Engineering and Medicine be thrown open to those who completed successfully the +2 stage. It was also provided that in the case of gazetted posts in the government, the selected candidate should be required to undergo a training of three years before appointment. This is another commendable measure and if implemented, it will be in line with the general thinking on the subject, i.e. delinking of most of the jobs from the university degree.

KARNATAKA

The new educational structure of 10+2+3 has been already introduced in the State. The first batch of students joined the 2-year pre-university course in 1971-72 after doing the 10-year S.S.L.C. examination, the curriculum for which had been revised in accordance with the recommendations of the All-India Education Commission (1966). In December 1970, the State government set up a Board of Pre-University Education. The board framed norms for starting new Junior Colleges and decided the staffing pattern, work-load, service conditions, pay structure, etc. of the new 2-year P.U.C. It also prescribed courses of study, syllabuses, etc. for these classes.

The new 2-year Pre-University course is being run : (i) in selected higher secondary schools which had the 11th standard corresponding to the one-year P.U.C., (ii) in composite degree colleges which already had the one-year P.U.C., and (iii) in newly established junior colleges which have only 2-year P.U.C. and for which certain norms as given in appendix I have been laid down. The higher secondary schools which were upgraded to have the 2-year P.U.C. were selected after getting them inspected. All the junior colleges which have only P.U.C. classes were in 1972-73 run by private managements. The proportion of the 10-year schools to the institutions having pre-university classes was approximately 4 : 1. Whether the 2-year P.U.C. classes are in upgraded higher secondary schools or in degree colleges or in independent junior colleges; the grant-in-aid code, the pattern of fees, and the curriculum etc., are the same everywhere.

The State government's ultimate objective is understood to be to take away the P.U.C. classes from the composite colleges and higher secondary schools and form them into separate units, viz. junior colleges. This process of bifurcation was proposed to be initiated from 1973-74 in a phased manner. The pre-professional courses were abolished consequent to the introduction of the 2-year P.U.C. The State universities too took action to upgrade the syllabuses of the degree courses.

The State government has also set up a State Council of Vocational Education in order to give impetus to the recommended vocationalisation of higher secondary education. During 1977-78, 13 institutions in three districts were selected and 21 vocational courses were introduced there. During 1978-79, forty-four institutions throughout the State were proposed to be selected—one in each of the 19 districts, with one more for the city of Bangalore and 24 other institutions in the six districts where the surveys had been completed. So far, vocational courses of only two years duration have been identified so that they can easily fit in with the duration of the +2 stage.

KERALA

The State has already adopted the 10+2+3 pattern. It, in fact, did so before the recommendations of the All India Education Commission were received. The first public examination at the end of the new class X was conducted in the year 1964. There is a pre-degree course of two-year duration followed by a three-year degree course. Everywhere, classes XI and XII have been in the degree colleges only. The first public examination for students completing the +2 stage was conducted at the end of the academic session 1965-66. The University of Kerala has introduced a few vocational courses at the +2 stage. Similar vocationalisation of the new classes XI and XII has been proposed by the other universities too. Efforts are being made to transfer the classes XI and XII from the universities to a separate board.

MADHYA PRADESH

The Government of Madhya Pradesh accepted the new pattern of education in principle in the year 1977-78. But the introduction could be done during 1981-82 only.

MAHARASHTRA

The Government of Maharashtra decided around 1970 to adopted the 10+2+3 pattern. Accordingly, the ten-year S.S.C. pattern was introduced in place of the eleven-year school and a new syllabus was commenced in class VIII from June 1972. The first batch of students appeared in the ten-year S.S.C. examination in March 1975. The State government decided that till the restructuring was in process, no new school or college should be started on the traditional pattern.

While the Vidarbha and Marathwada divisions of Maharashtra had 11-year higher secondary schools as well as ten-year high schools, followed by P.U.C. and/or three-year degree course, the other division, viz. Western Maharashtra had 11-year S.S.C. (High School), followed by 2-year intermediate and two-year degree courses. With the introduction of the new structure, there is a uniform pattern in all the divisions of the State.

The State Board of Secondary Education was reorganised into the Maharashtra State Board of Secondary and Higher Secondary Education and given the charge of the +2 stage too. It was also announced that the degree colleges in the State be allowed to run the higher secondary classes up to the year 1979 only, by which time all the pre-university or pre-degree teachers were expected to be absorbed by the upper classes in the colleges. The higher secondary classes have, however, continued to be with the degree colleges even today.

MANIPUR

The Government of Manipur introduced the new pattern in the new class IX from the academic session 1978-79. The first public examination at the end of new class X was accordingly conducted in the year 1980.

MEGHALAYA

The Government of Meghalaya also has accepted the new pattern and introduced the 10+2 structure in the educational institutions of the State. As a part of the composite State of Assam, Meghalaya has had the same system of education as Assam. But the degree colleges in Meghalaya are now affiliated to the newly established North Eastern Hill University which has prescribed a three-year course for the first degree in general education. The State government had, therefore, to take decision about introduction of only the 10+2 part of the new pattern.

NAGALAND

The Government of Nagaland had also in the past been following the Assam pattern of education. It introduced the new pattern in the new class IX from the academic session 1979-80. According to this schedule, the first public examination at the end of the new class X was to be given in 1981.

ORISSA

Till a couple of year back, while bulk of educational institutions in the State were under the 11+1+3 pattern, there were a few higher secondary schools of 12 years too. With subsequent winding up of the higher secondary system in the State, the operative pattern everywhere became 11+1+3. The State universities were considering introduction of a two-year P.U.C. and a two-year degree course. According to this, the State should have had 11+2+2 educational structure. This structure was, however, adopted by the universities of Berhampur and Utkal only. The third university, namely Sambalpur, followed the 11+1+3 pattern. The State government later accepted the new pattern of education and introduced the same in the new class IX from the academic session 1978-79. The State Board of School Education, which was directed by the government to work out details of the new structure, completed the assignment in time.

PUNJAB

After examining the feasibility of introducing the 11+2+3 educational pattern in the State, the Government of Punjab initiated measures to introduce vocational courses in the on-going structure itself. Later however, it accepted the new pattern and decided to introduce the same in the new class IX from the academic session 1978-79. The same was, however, postponed and introduced during 1986-87 only.

RAJASTHAN

The State government was understood at one stage to have accepted in principle the new educational structure. The thinking was to add class XII to the schools only. The government proposed to close down the pre-university course in the colleges: and in that event the higher secondary stage of 12-years was to be the only channel for going into the universities. The year from which the 12-year school course was to be introduced was not decided. The Rajasthan Board of Secondary Education, which formerly used to conduct Higher Secondary Part I examination, abolished it. As a consequence, all high school students and those in class X of the higher secondary schools were to take the Secondary School Examination of the board at the end of class X and until class XII was added, the students were to take the higher secondary examination at the end of class XI. The Government of Rajasthan then accepted the new pattern and decided to introduce it in the new class IX from the academic session 1978-79. But this introduction was postponed. The +3 stage is already operative in the State.

SIKKIM

The Government of Sikkim whose schools are affiliated to the Central Board of Secondary Education accepted the new pattern and introduced it in the year 1975-76 in the new class IX. The first public examination at the end of the high school stage was accordingly organised in the year 1977 and the first public examination at the end of the +2 stage was conducted in the year 1979.

TAMIL NADU

The task force of the Planning Committee of the State had recommended introduction of the new pattern. After considering the whole matter, the Government of Tamil Nadu accepted the new pattern and introduced the same in the new class IX in the academic session 1976-77. Accordingly, the first public examination at the end of the high school stage was conducted in the year 1978. The State Government has also set up a Board of Higher Secondary Education to plan the +2 stage of education. The Director of School Education is Chairman of the board. At present, the board is a part of the State government machinery but the proposal is to make it an autonomous organisation. The degree colleges have been permitted to retain the +2 stage for five years only. Also during this period, the higher secondary stage is to be affiliated to the Board of Higher Secondary Education only.

TRIPURA

In the past, all secondary schools of the State were affiliated to the West Bengal Board of Secondary Education and all colleges to the University of Calcutta. The State government accepted the new pattern of education and introduced the same in the new class IX from the academic session 1974-75. The State government also set up its own Board of School Education, which conducted the first public examination at the end of the high school stage in the year 1976. The +2 stage was introduced in selected schools of the State during the academic session 1976-77, and efforts were being made to introduce appropriate vocational courses in selected higher secondary schools.

UTTAR PRADESH

The Government of Uttar Pradesh has also accepted the new pattern in principle and decided to introduce the same in class IX from the year 1978-79. The operative structure in the State is already 10+2. In the introduction of the new pattern, however, one year may have to be added to the degree courses in the colleges affiliated to the State universities. In January 1973 a meeting of Vice-Chancellors of all universities of the State was held. It was agreed in principle to introduce a three-year degree course. The details were being worked out by a committee. Another committee was to review curriculum for the secondary stage and take other preparatory measures including rationalisation of the examinations. In the meantime, the on-going pattern continues to operate.

WEST BENGAL

The Government of West Bengal decided to introduce the new pattern of school education from 1st January 1974, at the beginning of the new academic session in the State. The State Board of Secondary Education had finalised a new syllabus for the new classes IX and X. The first public examination at the end of the new class X was accordingly held in 1976 and the +2 stage commenced in the academic session beginning on January 1, 1977. The State government set up a separate organisation, namely Council for Higher Secondary Education, to which the new higher secondary schools were affiliated and which prescribed syllabus for the +2 stage and was to conduct the examination at the end of that stage. With the help of this body, a few vocational courses have also been introduced at the +2 stage in some selected higher secondary schools.

The question about the duration of the first degree course in general education has been under consideration of the State universities as well as the Government of West Bengal. The decision taken in this regard is not known. It is, however, presumed that the universities have agreed to continue with the three-year degree course. It may be mentioned in this connection that the Vishwa-bharati University located at Shantiniketan in West Bengal continues to follow the three-year degree pattern.

UNION TERRITORIES

All schools of the Union Territories of Andaman and Nicobar Islands, Arunachal Pradesh, Chandigarh and Delhi are affiliated to the Central Board of Secondary Education. The board had decided that the 10+2 pattern be introduced in its member-schools from the academic session beginning in May 1975. Towards that end, a new syllabus for the new classes IX to XII and a set of text books based on that syllabus were prepared or selected and made available to the member-schools of the board.

The administration of Dadra and Nagar Haveli introduced the new pattern of education in class IX in the year 1974-75. Accordingly, the first public examination at the end of class X was held in the year 1976 and enrolment for the +2 stage commenced in the academic session 1976-77. The administration of Goa, Daman and Diu similarly introduced the new pattern in class IX in the academic session 1973-74. The Union Territory of Lakshadweep, following the Kerala pattern, introduced the new scheme in class IX from the academic session 1974-75.

The Mizoram administration introduced it from the academic session 1982-83. The administration of Pondicherry (comprising Mahe, Yanam, Pondicherry and Karaikal areas) has already introduced the new pattern following introduction of the same in the neighbouring States of Kerala (for Mahe), Andhra Pradesh (for Yanam) and Tamil Nadu (for Pondicherry and Karaikal). Accordingly, the first high school examination under the new pattern was conducted for the Mahe and Yanam areas of the territory by the Kerala and Andhra Pradesh Boards in the years 1964 and 1969 respectively. And a similar examination for the Pondicherry and Karaikal schools was held in the year 1978 by the Tamil Nadu Board.

KENDRIYA VIDYALAYAS AND OTHER SCHOOLS

All the Kendriya Vidyalayas (Central Schools) and Sainik Schools, a large number of public schools, convent schools and other all-India secondary schools which are affiliated to the Central Board of Secondary Education adopted the 10+2 pattern of school education from the academic session commencing in May 1975 when the Central Board introduced that pattern in its member-schools, The Council of Indian School Certificate Examination also decided to adopt the new pattern and it introduced the same in its member-schools. The schools affiliated to these two examining bodies are distributed all over the country. A few schools affiliated to the Central Board are also located outside India and they have been following the new pattern since 1975.

TABLE

Progress in Implementation of the New Pattern

STATES

State/U.T.	*Position Regarding Implementation*	*Year of Introduction in Class IX*	*Year in which First Batch took Class X Exam.*	*Year of Introducing +2 Stage*	*Year of Introducing Vocational Courses*
(1)	(2)	(3)	(4)	(5)	(6)
Andhra Pradesh	Implemented	1967-68	1969	1969-70	1975-76
Assam	—do—	1974-75	1976	1976-77	Vocational Surveys were in hand
Bihar	—do—	1979-80	1981	1981-82	1981-82
Gujarat	—do—	1974-75	1976	1976-77	1977
Haryana	Implemented	1981-82	1983	1983-84	1983-84
Himachal Pradesh	Not Implemented the 10+2 part until 1986				
Jammu and Kashmir	Implemented	1974-75	1976	1976-77	1976-77
Karanataka	—do—	1969-70	1971	1971-72	1971-72

(*Contd.*)

(1)	(2)	(3)	(4)	(5)	(6)
Kerala	Implemented	1962-63	1964	1964-65	Kerala University Offers Some Vocational Courses
Madhya Pradesh	Implemented	1981-82	1982-83	1983-84	1983-84
Maharashtra	Implemented	1973-74	1975	1975-76	1978-79
Manipur	—do—	1978-79	1980	1980-81	1980-81
Meghalaya	—do—	—	—	—	—
Nagaland	—do—	1979-80	1981	1981-82	1981-82
Orissa	—do—	1978-79	1980	1980-81	1980-81
Punjab	Implemented from the year 1986				
Rajasthan	Not Implemented the 10+2 part until 1986				
Sikkim	Implemented	1975-76	1977	1977-78	1977-78
Tamil Nadu	—do—	1976-77	1978	1978-79	1978-79
Tripura	Implemented	1974-75	1976	1976-77	Not known
Uttar Pradesh*	Accepted in principle				
West Bengal	Implemented	1974	1976	1976-77	1976

*Already has the 10-year school followed by a 2-year intermediate stage.

UNION TERRITORIES

(1)	(2)	(3)	(4)	(5)	(6)
Andaman and Nicobar Islands	Implemented	1975-76	1977	1977-78	1977-78
Arunachal Pradesh	—do—	—do—	—do—	—do—	—do—
Chandigarh*	—do—	1976-77	1978	1978-79	1978-79
Dadra and Nagar Haveli	—do—	1974-75	1976	1976-77	—
Delhi	—do—	1975-76	1977	1977-78	1977-78
Goa, Daman and Diu	—do—	1973-74	1975	1975-76	—do—
Lakshadweep	—do—	1974-75	1976	1976-77	—
Mizoram	Implemented	from the 1982 academic session			
Pondicherry	Implemented	Followed schedule of the neighbouring State**			

*Introduction of the +2 stage has been deferred till the neighbouring States of Punjab and Haryana switch over to 10+2 pattern.

**Mahe (Kerala Board)—1964; Yanam (Andhra Pradesh Board)—1969; and Pondicherry and Karaikal (Tamil Nadu Board)—1978.

4

SCHEMES OF STUDIES AND EVALUATION

Emphasis of the New Pattern

The new pattern does not envisage mere addition of one year to the total period of education or transfer of one class from college to school education or *vice versa.* The restructuring has to aim at complete reorganization of the curriculum so as to raise the standard of Indian education generally, and more particularly of university stage to internationally comparable standards. The new curriculum has also to meet current needs of the society. That is, it should be more meaningful, relevant and practical.

After a State government or Union Territory administration has decided to adopt the new pattern for the area under its jurisdiction the first stage needing attention is the school stage covering the first ten years of schooling. Measures have also to be initiated in time to undertake consequential reorganisation of the other stages of education. Thus, the following preparatory steps may need to be taken in hand immediately:

(i) Reconstruction of the syllabus,
(ii) Preparation of text books, guide books and other reading material,
(iii) Orientation of resource personnel,
(Iv) Orientation of the teachers, supervisors and inspectors,
(v) Provision of science laboratories in schools where they do not exist,
(vi) Strengthening of school libraries,
(vii) Initiating measures to carry out district surveys in regard to the programme of vocationalisation at the higher

secondary stage and identification of the districts and their schools where the vocational courses should be introduced first, and

(viii) Advising the universities to reorganise their courses in order to meet the requirements of the new pattern.

Preparation of the curriculum, text-books and other instructional material takes time. To be strictly scientific, a draft curriculum should be tried out before adoption on an all State basis The first step towards introduction of the new pattern is, therefore, to take up reconstruction of curriculum and preparation of other instructional material. In various States and Territories, it is Curriculum Committees, Institutes of Education, Institutes of Science, Boards of Secondary or School Education, and individual universities which are responsible to prepare curricula for different stages of education. They have to be moved to action.

It is these organisations which will have to do the job so that the curricula, particularly for lowest stages of education, are in harmony with local environments. At the same time, it is highly desirable to formulate a broad framework within which the curricula are drafted in different States and Territories so that the purpose of the new pattern is served properly. Such a framework can best be suggested by a national organisation like NCERT. The framework may be considered stage-wise.

ELEMENTARY STAGE

It appears to me best to suggest that the curriculum for classes I to VIII should be built on the model curriculum for corresponding classes suggested by the NCERT. This stage relates to compulsory primary education visualized under Article 45 of the Constitution of India and the NCERT's curriculum indicates the standard and proficiency expected at the end of this stage of education.

Each stage of education has its own objectives. These are required to be fulfilled through the instruction imparted to the students of that particular stage with the help of the curriculum and reading material, school programmes, co-curricular activities and otherwise. Such objectives have been laid down in the past by a number of bodies and individuals somewhat differently. The latest in this regard in India and relevent to our work is the Ishwarbhai Patel Committee report already referred to in Chapter I. According to this committee, with whose findings I generally agree, the objectives of the first eight classes of school education should be as under:

(i) Acquisition of tools of learning, namely literacy, numeracy and manual skills.
(ii) Acquisition of knowledge through observation, study and experimentation in the area of social and natural sciences.
(iii) Development of physical strength and team spirit through sports and games.
(iv) Acquisition of skills for planning and executing socially useful productive work with the object of making education work-based.
(v) Acquisition of skills of purposeful observation.
(vi) Acquisition of habits of cooperative behaviour within the family, school and community.
(vii) Development of aesthetic perception and creativity through participation in artistic activities and observation of nature.
(viii) Development of social responsibility by inculcating habits (individually as well as collectively) of the culture and life-styles of persons of other religions and countries and readiness to serve the weak and the deprived.
(ix) Development of the desire to participate in productive and other processes of community life and to serve the community.

It may be emphasised that apart from the purely academic subjects including science, work-experience (socially useful productive work) and health and physical education should form an integral part of the school programmes and be made compulsory for all students. I feel that 10 to 15 per cent of the school time should be rationally demarcated for work experience and about 15 per cent for health and physical education so that approximately 70 per cent of the school time is left for teaching other subjects. For a 32-hour week of school work relating to this stage of education, the Ishwarbhai Patel Committee has recommended the following allocation of time:

For Classes I—VI/V

	Subject	*Time Allocation*
(1)	Languages	20%
(2)	Mathematics	20%
(3)	Environmental Studies (Social Studies, Nature Study and Health Education)	20%
(4)	Socially Useful Productive Work	20%
(5)	Games and Creative Activities such as Music, Dancing and Painting	20%
	Total	100%

For Classes V/VI—VII/VIII

	Subject	*Time Allocation*
(1)	Languages	7 Hours
(2)	Mathematics	4 Hours
(3)	History, Civics and Geography	4 Hours
(4)	Science (Integrated Course)	4 Hours
(5)	The Arts (Music, Dancing and Painting)	3 Hours
(6)	Socially Useful Productive Work and Community Service	6 Hours
(7)	Games, Physical Education and Supervised Study	4 Hours
	Total	32 Hours

The Ishwarbhai Patel Committee has a few other important recommendations to make regarding the elementary stage of education. The feasibility and practical implications of implementing them require to be considered in depth. A few of these may be mentioned here:

(i) Children of classes I—IV/V should not be required to remain in school for more than 2½ to 3 hours a day. One of the benefits which, according to the committee, will flow from this practice is that "trained teachers can be freed to teach at the pre-primary stage, give help to drop-outs who wish to re-enter the stream of formal education, run second shifts in single teacher schools or assist in programmes of adult education."

(ii) Exept in the case of Language, there is no need of text books in classes I and II; and in classes III-IV, there should be only one text book each for Language, Mathematics and Environmental Studies.

(iii) No homework should be set for children of classes I—V. The committee feels that due to the practice of giving heavy homework many children are unable to take part in games and other activities "which make life joyful." The committee has, therefore, urged that if a school organises self-study, it should be done within the school time as supervised study, supervised by the teachers.

SECONDARY STAGE

Objectives and Proficiencies

In so far as secondary or high school stage is concerned, the new classes IX and X should provide for a good course of general education. This is too early a stage for any specialisation in education. This stage should, therefore incorporate a strong core of subject which should mostly be compulsory for every boy and girl. This core should include development of language-competence and knowledge of Mathematics and Science as well as of the physical and social environments of the pupils.

More specifically, the course for classes IX and X should aim at providing the following achievements and proficiencies:

(i) A good competence in one language, working knowledge of another, and elementary knowledge of a third language.

(ii) Fairly good level knowledge of Mathematics.

(iii) Ordinary level knowledge of each of the four Science subjects, *viz.*, Physics, Chemistry and Life Sciences (Botany, Zoology and Human Anatomy and Physiology).

(iv) Ordinary level knowledge of the four Social Sciences, *viz.*, Geography, Economics, Indian History and Civilisation, and Civics.
(v) Growth of healthy living and physical well-being.
(vi) Experience of work in one craft or trade or hand activity.
(vii) Knowledge of one additional academic subject or experience of work in one additional craft or trade, on optional basis.

Looked at from a different angle, it may be stated that while finalising the curriculum we should bear in mind the fact that at the end of the secondary stage : (i) some students will leave studies, and (ii) some will either join a vocational or training institution or pursue the higher secondary course. The secondary stage will thus be terminal for some students and preparatory for further studies or training for others. In this manner, while the curriculum at the secondary stage should be comprehensive in coverage yet it should acquaint the students with essential details of the fundamentals to build a suitable base for further course of action.

Alternative Courses under Compulsory Mathematics

The capacity, interest and aptitude of the boys and girls differ. These differences are even more significant at the present level of development of Indian education when the student population in any school, class is heterogeneous as compared to the past when the students generally came from the urban and elitist families so that their population in the class was nearly homogeneous. This observation will specially apply to the subject of Mathematics, for the teachers of that subject have found that, unlike other subjects at the school stage, in the case of Mathematics a few students in the class are extremely competent and their achievement is 100 per cent or nearly 100 per cent but to many it is an extremely difficult subiect and they secure very poor marks. It is perhaps because of this factor that Mathematics and English (this subject due to its being a foreign language for which a favourable environment cannot be produced in our schools) have generally been responsible for the largest failures in the matriculation and equivalent examinations. I will, therefore, plead that while teaching of Mathematics as a subject should be compulsory for all boys and girls upto class X, there should be two alternative and equivalent courses under that subject,* both with equal weightage and any one of the two being available for study by a student in classes IX and X. These subjects may be called : (i) Mathematics and (ii) Practical Mathematics. While the syllabus under (i) should emphasise generalisations which are useful in further studies, that under (ii) should concentrate on mathematical issues of general application in day-to-day life and ordinary employment or work.

Scheme of Studies for Classes IX and X

Bearing the above considerations in mind, I would like to suggest the following broad schemes of studies for classes IX and X:

A. Compulsory Subjects

I. Languages—(i) One out of regional languages, mother-tongue, English or Hindi to be studied upto class X, and
    (ii) Another language of the same group or Sanskrit to be studied upto the end of class IX.
II. Mathematics or Practical Mathematics
III. Sciences
IV. Social Sciences
V. Health and Physical Education
VI. Craft or Trade (Work Experience or SUPW)

B. Optional Subjects

Any one from the following :

1. English
2. Hindi
3. Regional language
4. Mother tongue
5. Sanskrit
6. French
7. German
8. Russian
9. Physics
10. Chemistry

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*The view has later been supported by the Ishawarbhai Patel review committee which has recommended two alternative courses under Science too. It has also been accepted and implemented by the Central Board of Secondary Education for its Secondary School Examinations at the end of class X. The board has in fact now provided for two alternative courses in Mathematics, Science, Hindi and English in the secondary school examination.

11. Biology
12. Elements of Commerce
13. Elements of Book-keeping & Accountancy
14. Economics
15. Civics
16. Home Science
17. Physical Education
18. Vocal Music
19. Instrumental Music
20. Dancing
21. Painting
22. Commercial Art
23. Office Procedure and Typing
24. Tailoring
25. Embroidery, Needle-work & Knitting
26. Farming
27. Animal Husbandry
28. Horticulture
29. Fruit Preservation & Canning
30. Mechanism & Repair of Radio
31. Electric Gadgets & their Repairs
32. Carpentry
33. Black-smithy
34. Weaving
35. Leather-work
36. Bee-keeping
37. Cloth Printing, including Batik

In this connection, the following considerations may also be borne in mind :—

(1) The above scheme of studies pre-supposes that the three-language formula has been duly introduced in class V or VI, so that every student would have already studied three languages upto class VIII for at least three years. Even then, if the circumstances in any State or Territory so require, the second language from the compulsory subjects could be continued upto the end of class X.

(2) Of the two languages under compulsory subjects, Hindi might be one unless it has been already cleared in class VIII.

(3) The first language might be examined externally and the second internally by the school on the basis of a question paper to be given by the examination board. It is highly desirable that in the examination of a language, particularly at lower level, provison for a suitable oral test should be made in addition to the usual written test.

(4) It is visualised that the syllabus for Mathematics will be

more academic in character and that of Practical Mathematics, as the nomenclature indicates, more utilitarian. While the first one will be of greater use to those who want to pursue a course of higher education, the other one will meet the practical needs of those who wish to enter the world of work after completing the secondary stage of education.

(5) The list given under 'B. Optional subjects' is only suggestive and not exhaustive. It can be elaborated to include all possible academic and practical subjects relevant to high school stage.

(6) The above scheme of studies has been suggested in accordance with the spirit of new pattern of education in which the first ten classes are intended to provide for a good course in general education, including Science and Mathematics. The scheme, however, also makes provision for the study of one elective subject. The elective subject has been included to enable the student to further discover his aptitude. Such a provision should render greater help to the student in the selection of subjects at the subsequent stage of education if he wishes to proceed with further studies in the academic or the vocational stream. If by interest or future plan of work or circumstances, he proposes to join in class XI a vocational stream, he might opt for a craft or a trade. If he wishes to join the academic stream, he might opt for an academic subject. I would like to urge that there should be an open choice of subjects in class XI irrespective of the subjects studied in class X.

(7) If any language is offered under the optionals, it must be different from those studied under the compulsory subjects.

(8) The syllabus in any of the social sciences or sciences in the optional group should be higher than that under the same discipline in the category of compulsory subjects.

(9) The preparation of details of the course-content including the list of experiences of work in the sciences and the craft(s) should be done on the presumption that each institution works for a minimum of 220 days and 1,200 hours of instruction in one year as has been recommended by the Central Advisory Board of Education in its

thirtieth meeting held at Panchmarhi on 6th and 7th May, 1963.

(10) The purpose of the revised uniform pattern will be served only if the level of the courses is kept as high as possible. I should like to suggest that the minimum to be covered by the end of the new class X should be the syllabus for classes IX and X in the respective subjects prescribed by the Central Board of Secondary Education.

It may be added that in its document* the NCERT had recommended for classes IX and X the following scheme of studies:

1. Languages—First, second and third
2. Mathematics
3. Social Sciences (History, Geography, Civics, Economics, and Psychology)**
4. Science (Physical Sciences and Life Sciences)
5. Art, Music and other Aesthetic Activities
6. Work Experience
7. Health and Physical Education

In West Bengal the candidates are to be examined at the end of class X on the basis of the following scheme of studies:

1. First language—Two papers of 100 marks each, including 40 marks for oral tests. (The recognised first languages are: Assamese, Bengali, English, Gujarati, Hindi, Lushai, Malyalam, Marathi, Modern Tibetan, Nepali, Oriya, Punjabi, Santhali, Sadani, Telugu, Tamil, and Urdu).
2. Second language—One paper of 100 marks. (The prescribed languages are English, if it is not offered as the first language, or Bengali).
3. Third language—One paper of 100 marks. (This language

***Curriculum for the Ten-Year School—A Framework*, National Council of Educational Research & Training, New Delhi, 1975, p. 41-31.

**The Ishwarbhai Patel Review Committee has favoured inclusion of only History, Geography and Civics in order to reduce the weight of the syllabus on the students.

is to be selected from out of (a) a classical language, (b) a modern foreign language, (c) a modern Indian language, or (d) Bengali).

4. Mathematics—One paper of 100 marks.
5. Sciences:
    (i) Physical Sciences—One paper of 100 marks, including 20 marks for oral tests and class record.
    (ii) Life Sciences—One paper of 100 marks, including 20 marks for oral tests and class record.
6. History (India and Her People, including the Constitution)—One paper of 100 marks, including 10 marks for oral tests and class record.
7. Geography—One paper of 100 marks, including 10 marks for oral tests, project work, and class record.
8. Work Education, Physical Education and Social Service—One paper of 100 marks (Work Education 50 marks, Physical Education 30 marks, Social Service 10 marks, and School Performance 10 marks).
9. One additional academic or vocational subject on optional basis—One paper of 100 marks.

Similarly, the Central Board of Secondary Education has prescribed the following scheme of studies for the new classes IX and X for which a public examination at the end of class X was to be conducted in March 1984.

(1) and (2). Two languages from among Hindi, English, Assamese, Bengali, Gujarati, Kannada, Marathi, Malayalam, Manipuri, Oriya, Punjabi, Sindhi, Tamil, Telugu, Urdu, Sanskrit, French, German, Russian, Arabic, Persian, Nepali, Portuguese and Tibetan—Two papers in each language with 75 marks in each paper.

(3) Mathematics A or Mathematics B : Two papers in each alternative course with 75 marks in each paper.

(4) Science A or Science B wit two papers and a practical examination in each alternative course. Science A has Paper I (Physics and Chemistry) with 70 morks (35 and 35), Paper II (Life Science) with 35 marks and a Practical with 45 marks (15, 15 and 15); and Science B has two Papers of 50 marks each and a Practical again of

50 marks.

(5) Social Science : Two Papers, Paper I (History and Civics) with 90 marks (60 and 30) and Paper II (Geography) with 60 marks.

(6) One additional subject, if offered, with two Papers of 75 marks each (or Home Science with one Theory and one Practical examination). This subject is not to be counted for passing the examination, but if the candidate gets at least 33% marks it will be mentioned in his certificate.

Scheme of Examination

The 10+2+3 pattern provides for a public examination at the end of class X. It seems desirable that the subject of Health and Physical Education and of Craft or Trade should be evaluated internally and left out of the public or external examination. Each of the subjects thus included in the public examination should have two papers except in the case of science subjects where there should be a practical examination as well. The practical examination should include a *viva voce* test, and passing in the practical examination in each of the relevant subjects should be obligatory on the part of the student. In Sciences, project work could be encouraged and supported in lieu of experimental work. As regards theory, the two question papers under Social Sciences might cover the various subjects as under :

Paper I : (Geography with 2/3 weightage plus Economics with 1/3 weightage)

Paper II : (Indian History and Civilization with 2/3 weightage plus Civics with 1/3 weightage)

Similarly, the two question papers in Sciences should cover the various subjects as under :

Paper I : (Physics with 2/3 weightage plus Chemistry with 1/3 weightage)

Paper II : (Biology with 2/3 weightage plus Human Biology with 1/3 weightage)

Quality of Question Papers

In our conditions, reform of examinations is an issue which merits consideration in its own right and as an integral part of the educational transformation which has been visualized through introduction of the new pattern. Among the various aspects of a public (or external) examination in India, both at school and college stages, it is the quality of question papers which seems to need maximum attention. Very special effort will need to be made (more so in our universities) in order to make the question papers scientific and appropriate instruments of evaluation. A good deal of work has been done both in India and abroad in constructing various types of questions on scientific lines. Our examination boards and paper-setters would be well-advised to make full use of this material in order to improve the reliability and validity of our examinations. As a general statement, it might be suggested that the proportion of the essay-type, short-answer-type and objective-type questions in any paper may vary from subject to subject. In most subjects, however, it is desirable to introduce the short-answer-type questions in an increasing measure. This step will considerably improve the quality of written examinations.

Wastage through Examinations

Another aspect of examination reform relates to raising minimum marks for passing and yet liberalising the practice for weaker students. Under existing rules of various examination boards, 33% is often considered to be minimum pass mark or cut-score, as it is called. This means satisfaction of examining authoriries with the fact that if a pupil has made only 1/3 progress, he should be declared successful. Criticising this practice in a gathering of educationists some years back, Vinoba Bhave asked the audience whether a cook would be continued in employment if out of every three chapaties prepared by him, two were found to be burnt. We may add other examples : whether a medical practitioner who can cure only one out of three patients would be allowed to continue the practice; whether in the monthly salary received by an employee the payment will be considered adequate if 2/3 of the currency given to him is fake; whether an engineer will be permitted to function if out of every three bridges, which he constructs, two collapse as soon as they are built. We may take any situation.' The results will not be considered satisfactory with only 1/3 of success. But in the examination work we have done so.

Mathematically, more than 50% marks only should mean success in a particular paper or test, for these marks could be rounded off to full marks.

Raising the cut-score to 50 per cent will, however, increase the percentage of failures still further. The latter percentage is already high. This is clear from the analysis of results of the examinations of different boards given in the table ahead.

The table reveals that about 50 per cent of the candidates appearing for high school and about 45 per cent of those appearing for higher secondary examinations fail every year. This percentage in the case of private candidates is known to go up to 70 per cent or even more. The most interesting characteristic of these percentages is that they have a tendency to remain more or less stationery from year to year. It should be expressed that if the pass percentage is only 50, it means that half of the expenditure of money, time and energy on education and instruction of the relevant students, has been wasted. Also, failure has a demoralising effect on unsuccessful candidates. The failure of such large number of students, particularly after they have been screened each year by means of annual and other examinations, is extremely disappointing. It is curious that we have taken little notice of this wastage, which is, in a way, more serious, although we have said so much about the wastage through drop-outs at the primary stage.

Apparently, the factors for this wastage are many. They may include inadequate supply of teachers, unsatisfactory teaching methods, lack of physical facilities, teaching aids, libraries and laboratories, poor conditions for study at home, low nutritional standards, lack of motivation among the pupils, unsatisfactory syllabus and defective evaluation procedure. In any group of pupils there may be some who, for one reason or other, have been inadequately prepared and may, therefore, be declared as failed. But how fair would it be if half or nearly half of any group of students are declared to have failed and this phenomenon allowed to continue year after year. While all factors leading to this failure are not fully under the control of various examining authorities, there are some for which these authorities alone seem to be responsible. There is, therefore, a case to give a fresh look to this aspect of our examination work too and see what can be done to avoid the tremendous wastage in our educational system, particularly in the context of very meagre and inadequate financial

TABLE

Pass Percentnge in Secondary and Higher Secondary Examinations, 1979 and 1980*

Name of Board	*Pass Percentage*			
	*Secondary***		*Higher Secondary****	
	1979	*1980*	*1979*	*1980*
1	*2*	*3*	*4*	*5*
Board of Secondary Education, Andhra Pradesh	50.8	50.6	—	—
Board of Secondary Education, Assam	25.7	—	43.2	—
Bihar School Examination Board	59.5	61.5	—	—
Gujarat Secondary Education Board	40.1	52.5	47.6	61.0
Board of School Education, Haryana	52.7	61.4	47.3	49.4
Himachal Pradesh Board of Secondary Education	45.8	—	—	—
J and K Board of School Education	47.7	38.3	50.9	43.0
Karnataka Secondary Education Examination Board	49.3	53.3	—	—
Board of Pre-University Education, Karnataka	—	—	49.2	48.7
Board of Secondary Education, Kerala	43.5	42.6	—	—
Board of Secondary Education, Madhya Pradesh	55.8	57.1	41.8	41.9
Board of Secondary Education, Maharashtra	39.3	47.1	55.2	47.8
Board of Secondary Education, Manipur	32.7	56.1	70.1	75.4

1	*2*	*3*	*4*	*5*
Meghalaya Board of School Education	40.1	42.2	—	—
Nagaland Board of School Education	45.4	40.7	—	—
Board of Secondary Education, Orissa	50.5	50.2	—	35.2
Punjab Board of School Education	54.0	51.6	56.8	55.2
Board of Secondary Education, Rajasthan	46.0	42.0	61.1	56.9
Board of Secondary Education, Tamil Nadu	55.1	49.9	—	59.2
Tripura Board of Secondary Education	46.9	48.6	56.4	56.9
Board of High School and Intermediate Education, U.P.	40.9	45.1	61.5	64.8
West Bengal Board of Secondary Education	47.7	47.7	—	—
West Bengal Council of Higher Secondary Education	—	—	40.4	49.5
Goa, Daman and Diu Board of Secondary Education	42.3	52.9	69.6	54.0
Central Board of Secondary Education, New Delhi	67.9	67.8	69.9	70.9
Council for Indian School Certificate Examination, New Delhi	90.5	87.5	88.6	86.2
Average	48.8	52.1	56.8	56.2

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*Supplied by Union Ministry of Education on September 20, 1983.

**Includes High School and Matriculation Examinations.

***Includes Intermediate, Junior College and Pre-University Examination.

resources of the country. Since school education is a period of general education and not of specialisation, I should like to plead for the percentage of pass students to be raised without, of course, adopting any irrational method or lowering the standard of evaluation.

Highest Marks in Humanities

There is yet another direction in which it should be desirable for all examining authorities to move. This relates to the area of highest marks awarded by the examiners in humanities. If the best students in Mathematics or Physics can score 100 per cent marks, how is it that the best students in History, Geography, Economics, Languages, and other branches of humanities cannot expect to score that high marks? Is it because there is something inherent in these subjects or the concerned examiners believe that the available marks are to be kept back and not to be given to the candidate? Is it because the subjective element of personal likes and dislikes for particular types of answers among these examiners is very great? Or, is it because these examiners are relatively more conservative, that is, they do not want to give high marks because they or nobody else in their time got such high marks? Answers to all these querries are obviously in the negative. The main reason would appear to be that we have not considered the matter seriously. Science today is extremely important. But the world cannot and should not, live by science alone. This is being realised everywhere in an increasing measure. Appropriate reform of our examinations would make its own contribution to encourage better students to offer the subjects from humanities also, apart from introducing greater rationality in our scheme of examinations.*

Continuous Internal Assessment

While continuance of the practice to hold a public examination at the end of high school is desirable in order to maintain uniformity in the standard of evaluation, it has to be noted that on educational considerations alone the teacher of the student is his best evaluator. It has also been emphasised time and again that the

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*This and the previous para have been adopted from the author's book *Changing Facets of Indian Education* published in 1973 by Allied Publishers, 13/14 Asaf Ali Road, New Delhi-110001.

single examination at the end of academic year should be replaced by a system of continuous internal assessment. Most progressive schools in the country are already doing so, except that they hold an annual examination as well. Perhaps in the present conditions continuous evaluation throughout the year supplemented by an annual examination would be the best practice. Such a practice takes away from annual examinations the chance factor and several other evils which adversely affect growth of pupils. Along with the introduction of the new pattern of education, therefore, a scheme of continuous internal evaluation should be launched.

It will be remembered that in the fifties such an evaluation was introduced on a big scale in several States, following the recommendations of the All India Secondary Education Commission. But it had to be gradually withdrawn from nearly everywhere. The scheme is, however, unquestionable in principle. We have also grown as a nation since 1953. We should, therefore, hope for better performance. I would, in any case, suggest that the result of continuous internal assessment throughout the course should be incorporated after moderation, if necessary, in the certificate of the board conducting the public examination in a separate column parallel to the one carrying the result of external evaluation. This practice, it is hoped, will be helpful in enabling both the internal and external evaluators to review their respective procedures. A discordant position with respect to the results incorporated in the two parallel columns will not be allowed to continue long whether it applies to a school, an examination board, or an individual subject or teacher. The public opinion is bound to prevail in favour of improving the situation.

Marks or Grades

It has been a subject of controversy in India for many years as to whether examination results should be announced in terms of marks and divisions (as is happening today in most cases) or in terms of grades (as is happening in a few cases). Two arguments which can be given in favour of the current practice operative in most cases is that the tool of 'marks' is mathematically finer than that of 'grades', and that even in the system of grades the actual evaluation of an answer-book is to be done first in terms of marks which are thus converted into grades. The point against the system of marks is that it is unrealistic in the sense that in actual practice the human mind, which makes the judgment, is not capable of discriminating between the achievement of two examinees securing, say, 47% and 48% marks. The human mind can only classify the examinees into a small number of broad categories. This argument, which is based on reality, is worthy of better acceptance.

I have been feeling and expressing for many years that our practice of 'pass' or 'fail' at the end of an examination in a school or college should also go. A possible solution is the institution of grades without reintroduction of a cut-score in terms of grades. I would thus like to suggest that result of internal assessment and external evaluation should be expressed in terms of grades on the basis of the following 5-point scale:

Grade I	(Outstanding)
Grade II	(Above Average)
Grade III	(Average)
Grade IV	(Below Average)
Grade V	(Poor)

These grades may roughly correspond to an achievement of marks which are 75% and above, 60% and above, 45% and above, 33% and above, and below 33% respectively.

It should be mentioned that introduction of the system of grades will bring in some difficulties of its own, particularly for the universities and recruitment authorities to define their admission and eligibility conditions. But solutions to such difficulties can be found. For example, a university, which does not admit a student receiving, say, less than 40% marks in higher secondary examination, may now decide that it will consider only those applicants who secure in higher secondary examination a minimum of five grade IIIs. Similarly, a recruiting authority, which considers only second division graduates, may lay down that it will consider only those who have secured at least two grade IIs. For further refinement, the requirements will have to be expressed in some detail, but in terms of grades only.

Cumulative Record Card

Apart from the academic growth there is also the question of measuring and recording the student's progress in other directions—physical, social, emotional, etc. For taking note of these developments in the personality of the pupils less we had started, again in the fifties, the institution of cumulative record cards. This institution has continued in some schools. I would urge that the maintenance of this card for each student should be enforced in every school and that it should be handed over to the candidate in addition to the certificate of the board conducting the public examination for him.

HIGHER SECONDARY STAGE

Importance of the Stage

Importance of the two-year higher secondary stage under the new pattern of education mainly lies in the fact that (i) this stage constitutes a link between general formation of the mind and the personality which the school education is and the higher learning specialisations which the college and university represent, (ii) it constitutes a terminal point of formal education for about half of those who enter this stage, and (iii) it is a unique stage in a student's life because it is this period during which he is changing over from childhood to youth and thus his personality and its components are growing, clashing, watching, imitating, demanding, giving, receiving and sharing so that it becomes perhaps the most crucial period for character formation.

The Two Streams

Apparently, curriculum for classes XI and XII should have to be built on the latest curriculum for classes IX and X. According to conceptual basis of the new pattern of education, this curriculum has to provide for two main streams, i.e.

(i) Academic Stream, and
(ii) Vocational Stream.

The academic stream may be taken up first (the vocational stream is being considered separately in a later chapter). Here one point may be raised before the broad frame-work of the curriculum is considered. With respect to the current syllabus for academic subjects, a complaint is sometimes made about an observed jump in the contents prescribed for two successive stages, e.g. primary and middle, or middle and high, or high and higher secondary. Big jumps should undoubtedly be avoided. But I would like to plead that we cannot escape some little jumps, and they should be permitted. They are not so wrong as is sometimes made out. After all, in every educational system and in every country, pupils go on leaving the system at different stages according to their convenience. Those joining the next stage are relatively more grown up, mature and knowledgeable. They are, therefore, in a position to cope with a heavier curriculum. They ought to be in that position, in any case. Also the teacher, while introducing in the class any element of the syllabus, invariably links it with what the students had studied before. The practice of a little jumps in the syllabus of the subsequent stage can thus be well utilized to raise the standard of education.

Objectives and Proficiencies of the Academic Stream

The objective of the academic stream is to prepare the student for university or higher education, in case he desires to avail himself of such education. Higher education in this context is to cover both general education as well as professional education like Engineering and Medicine. The courses in the new classes XI and XII should thus aim at giving the following achievements and proficiences :

(i) Further competence in one language and its literature (If knowledge of more languages is desired by any student, the same can be acquired by appropriate offerings under the electives or through selection of additional subjects), and

(ii) Knowledge in four elective subjects of an academic character (I would suggest that proficiency in at least one of these subjects should be such that it would prepare the student for an honours course in that subject).

Scheme of Studies

A suggested scheme of studies for the academic stream could be as under :

I. Language and Literature	— One out of the regional languages, English or mother-tongue, greater

weightage being given to the 'language' part.

II. A total of four subjects from the following :

(1) One or more from among the languages mentioned in the Constitution of India and different from the language offered under I.

(2) One or more from among foreign languages, e.g. English, Russian, German, French, Chinese, Japanese, Tibetan, Nepalese, and others (English cannot be offered again if the same has been offered under I).

(3) Mathematics or Advanced Mathematics.

(4) Statistics.

(5) Physics or advanced Physics.

(6) Chemistry or Advanced Chemistry.

(7) Botany.

(8) Zoology.

(9) Human Biology.

(10) Economics or Advanced Economics.

(11) History or advanced History.

(12) Geography or Advanced Geography.

(13) Logic.

(14) Political Science.

(15) Sociology.

(16) Psychology.

(17) Commerce.

(18) Book-keeping and Accountancy.

(19) Home Science or Advanced Home Science.

(20) Physical Education.

(21) Vocal Music.

(22) Instrumental Music.

(23) Dancing.

(24) Painting.

(25) General Agriculture.

(26) Biology (For Agriculture).

(27) Agronomy.

III. Participation in at least one of the prescribed co-curricular activities, namely N.C.C., N.S.C., Physical Education, Social and Community Service, etc.

In this connection, the following considerations may be added :

(1) The above list of optional or elective subjects is only

suggestive and should not be considered to be exhaustive. It can be elaborated or amended.

(2) If study of a subject at advanced level is available, it might be stipulated that preference for admission to honours course in that subject in the university will be given to those who have studied that subject at the advanced level.

(3) In the matter of admission to a university course in home science, it might be stipulated that preference will be given to those who have studied Advanced Home Science, provided they have also studied the relevant basic sciences.

(4) Similarly, in the matter of admission to a university course in Agriculture, it might be stipulated that preference will be given to those who have studied General Agriculture, provided they have also studied the relevant basic sciences.

(5) For admission to engineering and medical courses at university level, the concerned authorities should be able to lay down their own requirements in terms of the subjects whose knowledge is considered essential. So far the admission authorities of engineering colleges have been insisting on good knowledge of Physics, Chemistry and Mathematics. They will now have to consider whether they should add a fourth subject, or whether they should expect the candidate to possess advanced knowledge in one or more of Physics, Chemistry and Mathematics. Similarly, the admission requirement for a medical college has so far been good knowledge of Biology, Physics, and Chemistry. Some medical colleges have of late added Mathematics as the fourth subject. I think at the new higher secondary stage, Botany and Zoology should be studied as two separate subjects. In that case the issue to consider will be which are the specified subjects whose knowledge should be considered essential for admission to a medical college and also at what level—advanced or ordinary.

(6) I would consider it desirable to permit students of higher secondary education to choose any four subjects as electives. This would encourage inter-disciplinary study

> at the university stage. However, taking into consideration the limitations of practicability in classes XI and XII and the usual rules for admission in most universities, it is desirable to group the electives in appropriate combinations. For example, those planning to join commerce faculty in a university should offer Book-Keeping and Accountancy as one of the subjects and those intending to study Economics at university level should be well-advised to offer Mathematics (advanced or ordinary).

Here again details of course-content including listing of items for practical work or of projects will apparently have to be prepared by each Board of Higher Secondary and Vocational Education (by whatever name it is called) or by the State government with the help of its expert organisations. It is clear that the purpose of the new structure can be served only if the level of the courses is kept as high as possible. The target in this regard could again be suggested to be the corresponding syllabus of the Central Board of Secondary Education. Advantage in this connection should also be taken of the corresponding syllabus of the National Council of Educational Research and Training, if and when such a syllabus is available.

What has been said about the scheme of evaluation with respect to high school stage will apply to higher secondary stage as well. In the public examination at the end of the course, each subject should have two papers except in the case of science subjects and others like Geography and Home Science where there should be a practical examination as well. The practical examination should include assessment of the work done during the course and a *viva voce* test, and passing in the practical examination in each of the relevant subjects should be considered to be obligatory on the part of the candidates.

In Karnataka the following scheme of studies has been prescribed for academic stream of the new classes XI and XII:

1 and 2: Two languages from amongst Kannada, English, Hindi, Tamil, Telugu, Malayalam, Marathi, Urdu, Sanskrit, Latin, Arabic, French, Persian, German, and Russian, of which one must be an Indian language as laid down in the Constitution—One paper of 100 marks for each

language,

3 to 6: Any four subjects from out of History, Economics, Logic, Geography, Music, Commerce, Sociology, Political Science, Accountancy, Statistics, Psychology, Physics, Chemistry, Mathematics, Biology, Geology, Zoology, Botany, and a language other than these under Numbers 1 and 2 above—One paper of 100 marks for each subject with science subject each having two papers, one of theory with 75 marks and another of practical with 25 marks.

Or

Home Science consisting of four different papers of 100 marks each.

It should be mentioned that the Adiseshaiah Committee which reviewed the plus two stage of the new pattern has recommended the undermentioned scheme of studies and allocation of time in respect of the general education stream:

Subject	*Time Allocated*
Language(s)	15%
Socially Useful Productive Work (Work Experience)	15%
Four Elective Subjects	70%
Total	100%

The committee has, however, urged that this scheme should be applied with flexibility, allowing individual States and Territories and even individual schools to adapt the subjects and the distribution of time to suit local conditions and pedagogic perceptions.

UNIVERSITY STAGE

The 10+2+3 pattern of education implies that the duration of the first degree course in general education should be of three years. Sometime back a view was expressed that instead of a three-year degree course all over the country, the universities may be given the option of introducing a 2-year pass course and a 3-year honours course. A similar direction was indicated by the Union Minister of Education in the middle of 1977 as referred to in Chapter I of this book.

In this connection a reference may also be made to the conference of vice-chancellors convened jointly by the Union ministry of education and social welfare and the University Grants Commission at New Delhi during September-October 1975. After discussion in some detail the preparatory measures for introducing the 10+2+3 pattern with reference to university education, the conference adopted the following recommendation on the subject :

"The present situation in the States with regard to the structure of education leading to the first degree course and the decision taken or likely to be taken by the States in switching over to the new pattern recommended by the CABE and UGC were discussed and reviewed. It was revealed that there may arise three broad patterns of structure in the country, namely 10+2+3 as in the southern States and Gujarat, 10+2+2 as in U.P., and 10+2+2 or 10+2+3 as being considered in West Bengal and Maharashtra. It was agreed that :

(1) The universities should have a 3-year degree course, which some universities would call honours course, and this opportunity made possible by the 2-year post 10-year school including some part of the first year programme of the present first degree course.

(2) Some universities may plan a 2-year pass first degree course after 10+2. They should make a provision for a pre-postgraduate course of one year like a bridge course to prepare their students for entry to postgraduate courses.

(3) It will be necessary to provide financial assistance to the universities for switching over to 10+2+3 pattern, especially those universities which have at present a 2-year degree course.

(4) In the course of the next two years, it would be useful if the UGC could bring together the universities for bringing about enrichment of content in the first degree course and for ensuring a measure of comparability and equivalence of standards.

(5) In view of the agreement that 10+2 should be the pre-university level, the new enriched 3-year first degree

course should be launched with effect from or about the academic year 1979-80 and all the State governments should be advised to plan their secondary education accordingly.

(6) The attention of the UGC is drawn to the non-acceptance of the theory and proposals concerning all universities adopting a 2-year pass and a 3-year honours course as set forth in the first four questions of the paper on this subject. Rather each university should use its development grant received for developing the content and employing and training the needed staff for the new first degree programme that it develops on the basis of points (1) and (2) above. For areas of the country which face difficult financial situation in switching over to the 3-year degree course, special financial provision should be made.

(7) The UGC may set-up joint consultative committees with the All India Medical Council, ICAR, NCERT (Teacher Education) and the Bar Council to study the implications of 10+2+3 pattern on professional courses particularly with regard to entrance qualification, duration and curricula (A similar committee has been constituted jointly by AICTE and UGC for Engineering Courses).

(8) The question whether English is introduced as a compulsory language in the curriculum of the 3-year degree course is not important. What is important is that communication skills in the regional language as well as in English should be developed at a high level and remedial teaching and enrichment courses in English may be organised for maintaining a reasonably high standard of learning and teaching. In this connection, the use of modern techniques of language teaching and programmes for training and re-training of language teachers are emphasised."

Flexibility of approach is an important consideration in respect of many types of educational issues. The same principle can be extended to the duration of the first degree course under the new pattern of education as well, particularly when it is to apply to such a large country as India. There are, however, some other considerations too which cannot be ignored in this connection.

The 3-year degree course is already in existence all over the country with only three exceptions. The worth of a 2-year degree holder is bound to be underrated as compared to one who is in possession of a 3-year degree : pass or honours. This can give rise to many difficulties in a competitive world and in a country of educated unemployed. The same factor will also create a rush for admissions to the honours courses, which in turn may result in other problems for the universities. The whole matter will, therefore, need to be examined very carefully and the pros and cons of disturbing the existing structure of the 3-year degree course considered thoroughly by each university before it decides to bring about a change.

There are some other directions too in which the new pattern will create an impact on the university stage of education. The colleges and universities will, generally speaking, be faced with a student population which is more grown up, mature and knowledgeable. Such students will need a more careful handling. As the new pattern implies some selection among the admission seekers, the future students of higher education will also be found to be more academically oriented. As a consequence of such matters, new and upgraded degree courses, better equipped and more efficiently functioning libraries and laboratories will be called for in the universities and colleges. This will also necessitate better teachers and periodic intellectual refreshment for the existing ones. In this manner the opportunity to introduce the new pattern of education should be utilised well to raise the standard of our university degrees also to internationally comparable levels.

In order to provide further education and training to the more talented students of the vocational stream at the +2 stage and otherwise appropriate vocational courses will need to be established at the college stage too. These should, of course, cater to the relatively less explored areas and be, therefore, different from the established professional courses like Engineering, Medicine and Law. If necessary, the opening of separate colleges for vocational studies under the auspices of the universities like the one recently started by the University of Delhi may be examined. New kinds of vocations are in the offing and these may be usefully discovered and evolved on the basis of the demand surveys. For the success of these programmes some of the college teachers may have to obtain skill training as a part of their accomplishment.

It should be added that in matters of admission to the institutions of higher education, a more liberal policy will be required. A capable student who has studied general academic subject along with a vocational one at the +2 stage may have to be admitted for the first degree course in general education. This may also necessitate a more flexible approach in the restructuring of the courses and the evaluation of the students' progress.

There is another aspect of the matter too. Although, full impact of the new pattern on the enrolment in institutions of higher education has not been felt everywhere, yet the trend of increase in the enrolment has fallen considerably. Taking the country as a whole, enrolment in higher education during the sixties had grown at the rate of about 12 per cent annually. The rate of growth in the same enrolment during the early seventies declined. In 1973-74, it registered only 3.7% rate of growth over the 1972-73 figures.* This trend is likely to bring the curve further down when the full impact of the new pattern is realised. This may threaten the economic viability of some of the degree colleges. Removal of the pre-degree class from them or some others may also adversely affect the financial position of many degree colleges. If, in this process some of the weaker and redundant degree colleges are closed down, I do not think it should be a cause for worry. But those colleges, which serve backward areas, should certainly be given additional assistance from the State funds. In fact, somewhat increased grant-in-aid may be justifiably required, at least in the beginning, by many degree colleges in a State where the new pattern is introduced.

Pre-Professional Courses

I consider it only proper that after the new structure has been introduced, success in class XII should be accepted as the minimum qualification for admission in different professional courses like those of medicine and engineering at the university level. For that purpose, the pre-professional course, wherever it exists, should be abolished. So far, such a course has been a problem due to the hopes it raises, by its nomenclature, in the minds of the students and their guardians with respect to admission in the relevant

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*G.D. Sharma, *Enrolment for Higher Education—A Trend Analysis*, Association of Indian Universities, New Delhi, 1977, p. 4.

professional course. Such hopes cannot be fulfilled in many cases because of limitations of the seats in all professional institutions everywhere. The requirement of the pre-professional course should, however, be adequately taken care of in the new curriculum for classes XI and XII.*

Duration of B.E. and B. Arch. Degrees

The period of instruction for degress of Bachelor of Engineering and Bachelor of Architecture or their equivalent in most Indian universities has in the past been five years after the higher secondary or equivalent schooling. Since a good portion of Science, Mathematics etc., which is taught during the first two years of the 5-year course in Engineering or Architecture, will have been covered in the new classes XI and XII, it should be possible to reduce duration of the B.E. etc. degree courses to four years without any loss of standard, provided the admission requirement is raised to passing the new class XII. It will mean considerable saving to both the students and the State, because engineering or similar education is quite expensive. This will also contribute to raise the standard of instruction and general atmosphere in the concerned institutions of engineering and architecture because they will get students who are maturer by one year and are more knowledgeable. The step will bring about a uniformity in this regard all over the country because while bulk of the engineering institutions had in the past 5-year degree course, a few had 4-year course only. In the latter case, passing the Intermediate or equivalent examination has been the prescribed qualification for admission.**

In order to establish proper coordination between the requirements of the engineering and architecture institutions of degree level and the syllabi in Physics, Chemistry, Mathematics etc. for classes XI and XII, it is desirable that a representative of the State Directorate of Technical Education should invariably be taken as a member of the State Board of Higher Secondary or Vocational Education or the concerned syllabus-making authority.

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*Delhi University has since adopted this same practice in respect of its medical colleges.

**All the Indian Institutes of Technology and some other colleges of engineering in the country have now changed over to a four-year degree course with a pass in class XII as the admission requirement.

Similar considerations may also apply to the cases of other professional or semi-professional degrees like B.Sc. (Home Science) and B.V. Sc., wherever today the admission requirement is a pass in the 11-year higher secondary or equivalent examination.

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5

SOCIALLY USEFUL PRODUCTIVE WORK

Work Experience or SUPW

The expression Work Experience was introduced by the Indian Education Commission of 1966. It was intended to replace craft work and other activities including social work, which constituted the core of the on-going programme of Basic education in this country. People accepted Work Experience as a solution to the then prevailing controversy for and against the Basic system of education. Basic education as elaborated during the post-independence period was built on very sound principles and the same was appreciated by many educationists both within and outside India. Some of them called it a revolutionary development in education. But it did face practical difficulties in actual implementation. Since it aimed at providing good type of elementary education, it could expand only slowly. But the government had no patience to put up with the slow speed due to pressure of a constitutional requirement to enroll all school-age children within a period of ten years, i.e. by the year 1961. In the process, the quality of elementary education got sacrificed and the target of universalisation of elementary education also went on getting postponed. The year 1990 is the present target, but some people are sceptic of its attainment too.

The attitude of the people in favour of work experience at that time is illustrated by the report*, given in 1973, of a committee set up by the Government of Jammu and Kashmir for reorganisation of its own system of education. However, before that expression could stabilise, the Ishwarbhai J. Patel Committee suggested* its replacement by Socially Useful Productive Work, abbreviately called SUPW. This change was accepted by the educational world readily because it was more expressive. Properly understood and organised on sound educational lines, work experience was always conceived as socially useful and productive, but these characteristics had to be explained or emphasised. They have become explicit in the new expression.

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*Appendix II.

The work done by a child under SUPW will interest him and will generate confidence in himself if what he produces as a result of that work is useful. That is, if it can be used by him in the school or at home or it is put to use by somebody else within the knowledge of the child. In other words, the product should be found to be useful to the society which includes the child. Emphasis on productivity is important to avoid building a wasteful attitude in the child when in school and later in life as an adult. Productivity is a highly desirable objective in every industry, trade, commerce or any wage-based work which we do. Avoidance of wasteful attitude is particularly desirable in a poor country like India. If the product through SUPW is useful and well done, it will have a market; and if the child receives the whole or part of the sale-proceeds, he will get great encouragement and will try to do better. If this can happen, an important objective of education will be fulfilled.

Education, we all know, is a powerful instrument for economic prosperity (and spiritual well-being too) and upward movement in the society. This necessitates linking education with productivity. This link can be forged by introducing SUPW as an integral part of general education, more particularly at school stage where the focus is on education for citizenship, formation of character and inculcation of correct attitudes, values and habits. Accordingly, work experience has, in an earlier chapter, been suggested to be a compulsory subject of study during the first ten classes of school education. Work experience or SUPW should be meaningful manual work. A curriculum of general education having a strong component of SUPW is intended to provide a healthy and intelligent view-point on work through direct personal experience of doing various planned tasks. SUPW will, therefore, be also the attitudinal foundation for vocational and professional courses to be selected after the ten years of general education.

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*Appendix III.

Young school pupils, in all advanced countries, have been doing some kind of manual work in order to enrich the purely academic type of education. Polytechnical education in the socialist countries is organised around the basic productive forces of industrial society, namely, electrical energy, machine production, chemical production and agricultural production. In such countries, work experience is provided in the school shops, in the school plots, in the farms and in the factories. In India too some kind of craft or hand work has been done by all children of individual progressive schools. Something similar was also attempted to be introduced on a national scale in all elementary schools of the country under the scheme of Basic education initiated by Gandhiji.

SUPW and Basic Education

SUPW is not identically the same as Basic education. Although some of the purposes of SUPW and Basic education are common, yet there are a few fundamental differences between the two.

Philosophically, Basic education indicates a new system of education, but SUPW relates to only some aspects of education. In Basic education the traditional emphasis has been on simple craft work, although in the later stages of its growth other work situations were also supported. But SUPW encourages the use of modern machines driven by electricity and other sources of power in keeping with the requirements of the current technological age. Further, in the orthodox Basic system of education all academic knowledge was required to be correlated with craft activity organized in the school or the physical or social environments of the child. SUPW does not lay the same stress on correlation, although any competent teacher will find it natural, educationally sound, and fruitful to link as much academic instruction as possible with the child's experience in the work done by him in the school or otherwise.

Concept and Objectives

The conceptual basis for SUPW has several dimensions—philosophical, social and psychological. The children who have been involved in SUPW will look to manual and social work as equally honourable. They will develop an attitude of team-work and inculcate desirable values like tolerance and cooperation. Productive work done under proper conditions will also make the acquisition of knowledge more concrete and realistic. Manual work further contributes to develop the whole personality of the child, namely body, mind and spirit, SUPW also plays a significant role in bringing the school and the community together and thus develops among the children greater awareness of the needs, aspirations, problems and evils of the society. Psychologically, SUPW relieves the young child from the tyranny of purely academic and theoretical instruction against which his active nature always tries to protest. We all know that children are by nature restless and they have an urge to touch, feel, experience and understand everything. They are invariably full of curiosity, and anything which is new or which has motion attracts their attention. They get thrilled when a bullockcart or a car, for example, starts moving through their effort. In other words, they get interested in an activity which they themselves are involved in by touching, cutting, folding, winding or any other operation. In this manner, SUPW provides for furtherance and sustenance of the children's curiosity, development of neuro-motor coordination and an attitude of helpfulness to others, thereby making themselves more useful members of a democratic society.

Thus the concept of SUPW is based on many considerations. These include the following :

(i) SUPW should help a change in the attitude of the pupil towards manual work by way of a corrective to purely academic and bookish character of present education.
(ii) SUPW should form an integral part of education at all stages, particularly at the school level.
(iii) SUPW should be utilised as a tool for education and not an end in itself.
(iv) SUPW should be forward-looking and dynamic in keeping with the scientific and technological development of the society in which we live.
(v) SUPW should, as far as possible, be given under real productive situations.
(vi) Nature of SUPW prescribed in a school should ordinarily conform to conditions prevailing in and around the

school area.

(vii) Emphasis in the lower classes should be on SUPW and not on vocational training.

If SUPW is organised effectively, it should give rise to the following desirable achievements :

(i) Establishment of proper co-ordination between brain, eyes and hand.
(ii) Making school more attractive and education more interesting to children.
(iii) Establishment of contact with a hobby which can be developed as a spare or leisure-time activity or as a means of livelihood.
(iv) Promotion of cooperative attitude in the pupils.
(v) Inculcation of the same respect for physical workers as one has for the intellectual workers.
(vi) Acquaint pupils with tools, processes and materials of modern technology and impart skills in using these for productive activities.
(vii) Development of keenness to improve the tools and techniques of production and the methodology of work.
(viii) Stimulation of the desire to be perfect and precise in whatever is done.
(ix) Development of job-intelligence and imagination in student workers.
(x) Development of a desire to avoid wastage of every kind.
(xi) Acquisition of general elementary vocational skills.
(xii) Creation of opportunites for pupils to discover their aptitudes and interests.

Scope of Experience

The experience to be acquired by children through properly organized work has many dimensions. In addition to the achievements indicated above, it should :

(i) Make pupils familiar with the materials they process. This will widen their practical knowledge.
(ii) Make them familiar with principles of the structure and operations of the tools of work. The latter should include hammers, pillars, files, saws, shovels, ploughs, harrows, hand-drills, scissors, needles, painting brushes, duplicating

machines, mechanized spinning wheels, etc.

(iii) Make them familiar with modern production processes including labour saving devices and the machines which are controlled and regulated electrically and otherwise.

(iv) Make them familiar with the mechanisation of labour.

(v) Develop in them capacity to think technologically.

(vi) Promote their creative participation in socially useful work.

Allocation of Time

It would appear that in order to achieve the required objectives and in recognition of the fact that SUPW is a distinct curricular activity, some institutional time has to be allotted for it. This may vary from 7½ per cent of the total time, i.e. three periods a week, to 15 per cent, i.e. six periods a week. Such time may be given in one block (continuous number of periods) or as separate periods, depending upon the requirements and circumstances. Some time may also have to be found outside the school hours and during the vacations according to need.

Work for Different Stages of Education

While its spirit should pervade all stages of education, SUPW as such should be organised more intensively during the first ten classes of the school system. To make the programme realistic and implementable and in due consideration of the age-group of the pupils, SUPW should commence with simple hand-work in classes I and II. It should rise to a skill-oriented craft in classes III to VIII, and to a trade or simple vocational subject or higher level of craft or any other kind of socially useful hand-work in classes IX and X. In the latter classes, special emphasis should be laid on production and efficiency of work. That is, whatever is produced should be useful, excellent in quality, least costly in terms of investment, and, therefore, easily saleable.

The following items of work for different stages of education may be treated as illustrative, and they should not be considered as restrictive or exhaustive in any manner:

For Classes I and II

(i) Personal and environmental hygiene.

(ii) Paper work, including (saleable) paper bags.

(iii) Clay work.
(iv) Gardening.
(v) Spinning, including (saleable) *newar* weaving.

For Classes III to VIII

(i) Simple repair of household appliances, including (in the case of rural schools) agricultural implements, water-pumps, etc.
(ii) Repair and overhauling of cycle.
(iii) Simple repair and maintenance of other means of transport in the area, e.g. boat, bullock-cart, camel-cart, horse-cart, scooter, motor-cycle or car.
(iv) Participation in agricultural operations like ploughing, sowing, harvesting, and husking (including machine operations in this field).
(v) Polishing and varnishing of wood-work and colour-washing and distempering of walls.
(vi) Manufacture of simple things like chalk, candles, boot-polish, soap and ink.
(vii) Card board-work
(viii) Gardening
(ix) Floriculture
(x) Horticulture
(xi) Farming
(xii) Forestry
(xiii) Weaving
(xiv) Wood-work
(xv) Embroidery
(xvi) Cane-work
(xvii) Bamboo-work
(xviii) Fishing
(xix) Dancing
(xx) Instrumental Music
(xxi) Painting

For Classes IX and X

(i) Mechanism and repair of radio
(ii) Servicing and maintenance of electric gadgets
(iii) Bakery and confectionary
(iv) Type-writing in English
(v) Type-writing in Hindi or any Indian language
(vi) Tailoring
(vii) Sewing, needle-work and embroidery
(viii) Spinning and Weaving
(ix) Dyeing and calico printing
(x) Batik

(xi) Wood-work
(xii) Metal-work
(xiii) Leather-work
(xiv) Pottery
(xv) Workshop practice
(xvi) Printing
(xvii) Book-Craft
(xviii) Manufacture of sports goods
(xix) Toy-making
(xx) Paper craft and papier mache
(xxi) Cardboard-modelling
(xxii) Cane and bamboo-craft
(xxiii) Wire-work
(xxiv) Plastics
(xxv) Photography
(xxvi) Masonary-work
(xxvii) Commercial art
(xxviii) Gardening
(xxix) Fruit preservation
(xxx) Farming
(xxxi) Poultry
(xxxii) Piggery
(xxxiii) Fishery
(xxxiv) Floriculture
(xxxv) Horticulture
(xxxvi) Forestry
(xxxvii) Seed Production
(xxxviii) Bee keeping
(xxxix) Sericulture
(xl) Music (Instrumental)
(xli) Dancing
(xlii) Puppetry
(xliii) Sculpture
(xliv) Painting
(xlv) Theatre-craft

Selection of Activity and Planning of Work

As has already been stated, SUPW essentially means engagement of pupils in socially useful and productive activity which emphasises: (i) dignity of manual labour, (ii) application of mathematics, science and technology, and (iii) use of modern materials, processes, and methods of work-planning. In order to be effective the programme of SUPW should be of direct use to the pupil, school or community. SUPW should mainly be related to the basic needs such as health, food, shelter, clothing, transport, etc. These may be undertaken at home, in school, in workshops, on construction sites, on farms, or in factories.

At each stage the activity should be within the competence and maturity level of the children for whom it is prescribed. Every productive activity involves handling of certain materials and use of some tools. While selecting the activity, therefore, it should be ensured that the students of the age group concerned would be able to handle the material and use the tools required for the activity.

While selecting an item for SUPW, it is necessary that it is interesting as well as challenging and it contains some novelty for the concerned pupils. It may not be most appropriate, for instance, to provide kitchen gardening for students coming from agricultural families. On the contrary, the urban children may enjoy it more. Campus work, cleanliness and beautification of the class room as well as of school-building could be made compulsory for all students besides other crafts and activities. It must in this connection be urged that SUPW must not be made a fetish. The main idea is, as already indicated before, to create, in the minds of the children dignity of labour which has a healthy influence on the personality of the growing child, for work is the best social equaliser.

The activity should be carefully planned as a sequence of experiences and processes. Each sequence unit should be related and adjusted to the interest-span of the children. It means that the final product or outcome of the activity should not take an unduly long time to materialise. Two or more projects of SUPW should be completed within a school term. By the end of class VIII, a pupil should, as far as possible, be enabled to have experience of more than one or two types of works.

The activity should have potential to impart to the pupils adequate skill and enthusiasm for production or preservation or maintenance of some socially useful articles. The production of useful articles in a reasonably short period satisfies the creative urge and the achievement motivation of the pupil. It builds confidence in him. This is also a joyful experience for him and it urges him on to be more skilled and more creative so as to achieve greater efficiency in whatever work he plans to undertake.

The pupils should also be enabled to understand the social usefulness of the articles, processes and activities. Historical information should be given about their invention and evolution in answer to certain social needs. They should be studied from the stand-point of the application of scientific principles so that pupils may use their innovativeness to improve such articles and proceed further.

As regards planning the work, it has to be remembered that SUPW is an integral part of general education. Hence, whatever experience is provided, the pupils should be familiar with the why and wherefore of every process. The operations should be performed intelligently and not repeated mechanically. With increasing insight into different aspects of the operations, the pupils should begin to strive for more precision and better performance in the task undertaken. As Dr. Zakir Hussain pointed out, "The manual work, in order to be educative, should involve the mental process of problem solving, i.e. (1) identification of the problem, (2) forming of hypothesis for solving the problem, (3) selection of tools and material for executing the solution, (4) actual execution of the solution, (5) evaluation of the process of execution and the product, and (6) feeding back of the result." It is essential to undertake all these steps in providing SUPW for making it truly educative and useful in practical life.

Once a SUPW activity is selected, it is necessary to define its specific objectives in precise terms. It will be advisable if the objectives are defined in terms of : (i) behavioural changes to be aimed at in the pupils, (ii) standard of skill to be achieved by them, and (iii) the social utility of the products or processes.

The SUPW programme can also be planned in consultation with manufacturers, artisans, farmers and parents. In the rural areas, the community can help in chalking out the annual plan of SUPW for its school. The school inspectors, teachers and pupils can jointly discuss and prepare a detailed statement of activities for working out the total programme. The plan will precisely indicate : (i) the materials and tools needed for executing the programme, (ii) the number of stages through which the programme is to be executed; (iii) the achievements to be aimed at each stage, (iv) the standard of skills to be reached in the final stage, and (v) the estimates of the cost of production and the cost-benefit of the activity, where-ever possible. The plan should invariably give details of the assistance to be sought and ensured from the farmers, artisans, factories, home, school, etc.

Essential Inputs

In the past, craft education in our schools could not be organised well for want of suitable physical facilities and appropriate personnel. These handicaps may not be fully overcome even now. It is desirable for the State to provide a workshed to the school specially where the SUPW is connected with production of simple furniture, chemical products, cloth and other articles of daily use in the house and the community. The size of the workshed should be commensurate with the enrolment in the school; and it should preferably be located away from the main building in order to avoid disturbance to the academic work. The State should also equip it with worktables, tools, electricity, water, and other facilities. Some varieties of SUPW can, however, be arranged before and after school hours in the class rooms also. Some work under SUPW can be in-school and some out-of-school, depending on the location of the school and the type of SUPW project undertaken.

As regards SUPW related to the broad field of agriculture, the best way might be to arrange it in collaboration with farmers on their farms, wherever possible. In our case, attachment of farms to schools along with the requisite fencing, irrigation, manure, storage, watch-and-ward and other facilities is not possible to any appreciable extent. But pot-culture in urban areas can provide awareness for stimulating agricultural and horticultural work experience.

From this it would appear that even if repairs and replacements as well as consumable materials are kept out (for suggestions regarding consumable material, reference may be made to the next section), the initial provision of funds for the workshops and other facilities may be too large for any State to find immediately. The programme of work experience should, therefore, be kept elastic so as to enable each school to organise the activity in accordance with its resources. I would say that if paucity of funds continues, the programme may be staggered and priority, as a matter of policy, should be given to vocationalisation of education at the higher secondary stage. The latter educational reform will show more tangible results and should be treated to be more urgent.

For further appreciation of the programme of SUPW in schools, proper orientation of the supervisors, heads of institutions, and teachers—both SUPW and others—is essential. This is, in fact, the first pre-requisite. Properly trained and motivated personnel will not only contribute to the quality and effectiveness of the programme of SUPW but they will also get a part of the programme implemented by utilising locally available resources and material and without much assistance from the State. It is easier for the ignorant headmasters and educational inpectors to dampen the enthusiasm of teachers than to support and encourage it.

At the primary stage (classes I-V), it is the class teacher who will normally have to organize SUPW in addition to teaching other subjects to his class except that help, wherever possible, may be taken through part-time employment of local craftsmen. This calls for his pre-service training on correct lines by reorganising the teacher-training schools and revising their syllabus and programmes. Towards this end, a programme of preparing teacher-trainers for work experience is first necessary. At subsequent stages of education and in schools with large enrolment, specialist teachers of SUPW will be needed. They can be trained in the Central Training Institutes handled by the Union Ministry of Labour or in the Regional Colleges of Education or in Agricultural Extension Training Centres (after some reorganisation) or in special units which may be attached to selected teacher training institutions in the States and Territories. Pre-service and in-service training of teachers for SUPW is one of the important areas in which the physical facilities of some of the teacher training institutions in several States can be well-utilized instead of closing them down if they have now become redundant.

In the case of persons to be recruited as specialist teachers for SUPW, proper qualifications have to be prescribed. Where items of work relating to the broad field of agriculture are introduced, a graduate degree in agriculture should be the prescribed qualification. For other items, recruitment should be made from among those who have received technical training in the relevant subject(s). Before actual appointment, every one of these persons should also undergo a short course in pedagogy relating to the age-group of children which one has to handle. I would think that the salary scale of the SUPW specialist teacher should be at par with that of a trained graduate teacher in the State, with suitable advance increments or special pay being provided for those who belong to shortage categories.

Things Produced by Children

I may reiterate that in order to make SUPW a sound educational process, it must be organized systematically and scientifically so as to secure for the participating children as comprehensive an experience as possible. Even then, the children upto class VIII are too young and immature to produce many worthwhile goods which can compete successfully in finish and price with the commercially produced goods. Introduction of a commercial angle in

SUPW will smack of child labour; and the same is illegal too. That is not the purpose of the scheme either. Education of the children being the main objective of the scheme of SUPW, the finance or the audit authorities must not be allowed to weigh the expenditure incurred against the goods produced. The authorities should certainly ensure that there is no pilferage or misuse of the funds or material.

Even if some *ad hoc* sale of the goods produced by children were possible, their delivery to individuals against cash payment is likely to create difficulties and complications to the school as a public institution. The same will also throw extra burden on the teachers, which should be avoided. Because of difficulties of accommodation and of watch and ward, no school can think of storing the produce for years to show the same to audit or for some other purpose. It will only accumulate dust and will deteriorate.

Under the circumstances, I think the best course would be to ask all pupils to bring the raw or consumable material from their homes individually or jointly and to supplement the same from out of the pupil's fund, if and where necessary, with respect to those pupils who are too poor or resourceless and to give the produce back to the same students. Some types of goods (e.g. vegetables, or cloth, or carpentry goods) can also be used by the school children for getting a mid-day meal or a school uniform or for providing some school furniture or equipment; and this work might be channelled through the school cooperative. When a child receives appreciation of his produce by his parents and guardians or uses the same personally, it gives him great psychological satisfaction. It builds in him confidence or leads to self-criticism, and both the developments contribute to his growth.

Establishment of a training-cum-production centre is too idealistic a thought and should not be supported. It has not succeeded in the past even in the case of adults. If, however, it is intended to help the grown-up pupils to earn something, a production (and not training) centre can be set up for them. It should work outside school hours and run commercially. The accounts of the centre should not be mixed with those of the school. The students can produce and supply simple goods like dusters, *newar*, file covers, file boards, envelopes, and chalk and undertake repair of institutional and other furniture. They can produce or repair other things too needed in the area.

It is likely that some goods produced by more grown-up pupils, particularly those of classes IX and X are surplus and available for sale. In such a situation, it should be worthwhile to take advance advice and help of the sales units of organisations like Khadi and Village Industries Commission, All India Handicrafts Board, Silk Board, Coir Board, Small Scale Industries Commission, Tourist Development Corporation, and the local community.

Conclusion

Thus SUPW is participation in socially useful and productive work in the school, in the home, at a workshop or factory or firm or any other establishment or productive situation. Beginning as simple hand-work in the primary school, SUPW should progressively involve more complicated skill-learning. The objective of SUPW is to supplement the purely academic education by dexterity of fingers in order to establish a better coordination between mind and hand, to orient children to the modern technological age, and, above all, to enrich the education given to them and which will be useful to them later in life.

6

SCIENCE EDUCATION IN SCHOOLS

Science For All

As already indicated, we live in an unusual world marked by great and rapid changes. Since the appearance of man on this planet, thousands of years rolled by silently before any technological discovery could be made. This slow progress in technology, and consequently the stable physical and social conditions of living, gave ample time for individuals to adjust themselves to the prevailing conditions. But things have changed now. Advances in science, technology and other fields brought far-reaching changes within a single generation. This is all the more alarming because the pressures thus built up are cumulative; and they may prove disastrous too unless we prepare ourselves to face the challenge.

Besides preparing, through development of scientific attitudes, for adjustment to a fast changing world, science is needed by us in a more direct sense as well. As mentioned by the UNESCO Planning Mission (1964) in their report entitled *Learning To Be*, "The evergrowing importance of science and mathematics for the ecomomy and culture of any country and the evergrowing knowledge every year in the field of science have set the urgent task before all countries of the world to provide modern science and mathematics education to the youth so as to prepare the young people for life for mastering technical, agricultural, medical and other specialisations which are necessary for economic and cultural progress."

During the last two decades we have stressed the teaching of science (using different nomenclatures : general science, nature study, health and hygiene etc.) to all pupils during the first seven or eight classes which were often referred to as the elementary stage of education. This provision has been extended upto class X under the new pattern of education in order to provide functional scientific literacy to all citizens in the country. So far, science subjects were available for study at the high school stage as electives only. The Approach Paper relating to Curriculum for the Ten-Year School issued by the NCERT had stated that :

"There is hardly any need today to justify the place of science in a scheme of general education for school children. Science is all pervasive. Modern societies exist on the basis of science; science is intimately related to the means of production and means of communication including transport. Even economics and politics have to depend on scientific factors such as productivity from land or from industry, power of modern weapons or the speed of transportation of ground and air forces. In the present situation anyone, therefore, in any walk of life must be aware of certain quantum of science and technology. Secondly, the scientific method extends far beyond science. All disciplines are becoming scientific. The method of observation, of making symbolic, graphic or linguistic models, of designing experiments, of applying reason as well as imagination to draw conclusion from data to formulate theories, the method of keeping an objective view while theories are tested is a method which pervades every discipline. Facts of today may not be the facts of tomorrow and theories may also undergo change, but there can be no going away from the method of science.

"Science should also help in reducing general obscurantism and all sorts of prejudices based on caste, religion, language or region. By emphasising a rational approach, and a challenge to thinking and reason, science should also help in the development of a democratic, secular and socialist State."

Now further elaboration is probably needed to stress the importance and urgency of the teaching of science to all. We might, however, restrict ourselves to the two issues mentioned above, namely: (i) needs of the individual for adjustment, and (ii) needs of the society in terms of teachers, technicians, engineers and technocrats. Bearing these two angles in mind, we might see which science should be taught to the pupils at different stages of school education and with what objective.

Primary Stage (Classes I-V)

It is obvious that the needs of individual adjustment to a fast-changing world will be the dominant concern at this stage of education. This is because, (a) the pupils are not mature enough for even the beginning of a preparation for the second kind of needs, and (b) the factors constituting the basis of adjustment i.e., attitudes and appreciations are such that one can hope for their management only at an early age in life. These factors belong to the process aspect of science. At the primary stage, the product aspect of science may play a subsidiary role to the process aspect. But it has to be there all the same, since there can be no processing without reference to a corresponding product or content in science.

Reference in this connection may be made to the key-note address on the curriculum for the first ten school classes given by Prof. Rais Ahmed, Director, National Council of Educational Research and Training to the all-India conference of District Education Officers held in Vigyan Bhawan, New Delhi in March 1976. He said :

"The first important feature of the new curriculum which I would like to mention is that it is suggested that science should be an integral part of the curriculum from class I to class X. I must add at once that the purpose of this is both to prepare our citizens for a society which would be increasingly dependent on science and technology and to develop in children knowledge which is concretely related to the problems of food, energy, health and productivity. It is not intended to merely transmit memorisable knowledge of facts of physical, chemical and biological laws and entities but to provide functional science education geared to the life, needs and aspirations of the people. It is intended that the teaching of science will be undertaken in such a way that the aims of the emerging society as they have been enumerated above are understood and appreciated by the student. The scientific curriculum and the method of teaching will be such that scientific method and a scientific outlook may be cultivated which may enliven other disciplines that the child will learn. It is obvious that the science courses if they have to fulfil such wide ranging purposes will have to be quite different from what they are today and hence such courses have to be carefully drafted. Corresponding books will be prepared with the help of editorial boards in which our distinguished scientists and sociologists will be involved.

"In the very early stages of learning, i.e., in classes I and II, it is expected that the teaching of science, of social science and of humanity will go hand in hand to show the integral and organic unity of knowledge and it will carry the title of environmental studies. A great deal of work will have to be done by teachers taking students out of their classes to carefully observe nature, observe things and their relationships, and to seek an understanding of the independence of man on his total environment. First hand facts will be collected by the students and they will discover the relations between these facts which will give them both the joy of discovery and an inborn grasp of the nature of the phenomenon. Without field work, without personal observation of the environment and the phenomenon taking place around us the knowledge of the student is bound to remain shallow and bookish and it has no chance of being comprehended. We realise that in the present arrangements of running the schools this precisely is the most difficult thing to do. Administrative flexibility will have to be provided in the school time-table so that when the teacher has planned to take the students out on observation trips he may be allowed to do so. Perhaps, where there is more than one teacher the teachers will have to cooperate with each other, consult and then finalise the time-table for the forthcoming two weeks or so. A long time practice of a fixed time-table in the schools will become an impediment in the proper learning of science."

For India and other countries at our level of development primary education is in a way the most important phase of education. About 80 per cent of the pupils of this stage drop out after completing primary education, and they constitute bulk of the citizens. Therefore, it is necessary that a meaningful and functional education is imparted at this stage. The Indian society has to depend mostly on agriculture. Planning of education should accordingly be based on this aspect of life. That is, the curriculum should have topics on health, hygiene, nutrition, agriculture, animal husbandry, population, and how to live and create a better society. Similarly, the mathematics taught should be useful and relevant to the pupils. There is no point in teaching logic of mathematics at this stage of education. Further, the environment should be used as the laboratory for teaching science. There should also not be much demarcation between science, social science and language. Many informative aspects of science and social science can be included in the language text-books as is already happening to some extent.

The emphasis of teaching science at this stage has to be on developing of concepts through inquiry-oriented activities involving the use of skills in science-processing. Further, the purpose should not be to stuff the minds of children with facts and information but to sharpen their intellect and to enable them to observe their environment. Each child should be encouraged to work as a scientist would do to find solution to his problem. In this way it should be possible for the primary school children to pick up not only the scientific attitudes but also the scientific methods of doing things.

Middle Stage

At this stage the study of science ought to be followed up in the form of individual disciplines of Physics, Chemistry and Life Sciences. The children are a little mature, and the needs of society in terms of a scientifically literate citizenry have to be taken into consideration for drafting the curriculum in science. It must be emphasised that the teaching of the various disciplines of science should not be compartmentalised at this stage of education. On the contrary, application of knowledge of Physics to Chemistry, of Chemistry to Life Sciences and so on should be highlighted. Teaching of science at this stage should also be related to Agriculture and Animal Husbandry and to technology, pollution and other such environmental problems. It is necessary to emphasise these areas so that even at this stage the pupils start thinking about solutions of the relevant problems. This approach will provide the added advantage of drawing attention of the students to researches in applied sciences, a field which is considerably neglected in this country.

Secondary Stage

The science courses (Physics, Chemistry and Life Sciences) will, at this stage, have to cater to diverse needs of two different categories of students, namely: (a) a large majority who will give up science as a subject of study after 10 years of schooling, and (b) a minority who will continue to study science either to prepare themselves for a career in that branch or otherwise.

The curriculum in science for this stage of education has to take care of the needs of both these categories of students. It is accordingly evident that the objectives of teaching science in classes IX and X should be: (a) to acquaint the students with recent trends in the subject, (b) to create in them a scientific attitude towards their daily life, (c) to create an awareness of the applied aspect of science, and (d) to develop in them an interest in taking up science as a future course of study. The laboratory work should be connected to what the child learns in the classroom in his theory course. The students should also be encouraged to take up projects as practical work in science.

As a general rule, the practical or applied aspect of science should be constantly borne in mind at the lower and the high stages of schooling. It will make education more meaningful and relevant and thus fulfil one of the main objectives of the new pattern. It will make teaching and learning more interesting and thus it will contribute to greater assimilation by the pupils. Above all, it will constitute the most effective method of teaching science to those pupils who have relatively lesser aptitude for it and who might have given it up if science was an elective subject only.

Higher Secondary Stage

Students who take up science (Physics, Chemistry and Life Sciences) as an elective subject in the academic stream of the higher secondary stage would in many cases prepare themselves for further studies in science and its application at the graduate, post-graduate and research levels. It is out of this group that teachers, technicians, engineers, doctors, several types of other professionals, and research workers will be produced to do various types of jobs in the country. As such, the objective of science education at the higher secondary stage is to lay the foundation of a good scientific career for the concerned students. Accordingly, modern concepts of science have to be taught in some detail so that the pupils are enabled to follow new developments in the field of their interest and other scientific achievements, generally through reading of popular articles, observation, discussion, etc.

Curriculum and Text-books

The NCERT has developed a package of curricular materials for teaching of Science. This comprises a Science syllabus for classes I to V, teacher's handbook of activities in Science, text-books in Science for various classes and their corresponding teacher's guides, and a primary science kit. These materials have been tried under a UNICEF assisted project throughout the country. It is understood that almost all States have adapted this material after tryout and the same is now available in various languages of the country. As is known, the medium of instruction at primary stage and for training teachers for that stage is the mother-tongue or the regional language.

A similar exercise is understood to have been done for the middle stage as well under a UNICEF assisted point project. For this purpose, NCERT is reported to have made available to the States for tryout two model packages, namely the study group materials and the experimental project materials. Most States have prepared their own adapted versions of these materials. The latter materials are under revision for improvement on the basis of feedback obtained in the NCERT. The development of similar materials for the secondary and higher secondary stages of education has also been in hand.

Recently, a set of text-books in Science and Mathematics for use in schools under the new pattern of education has been prepared by the NCERT. A teacher's guide on environmental studies for classes I and II has been developed instead of the usual textbooks. This has specially been done to de-emphasise book learning in these two classes. In his earliest phase of studies the child learns best the elements of Science and Social Science from his environment. He, then, starts appreciating the importance and value of the general principles and concepts of science, health and hygiene, environmental sanitation, agriculture, community resources and other aspects of physical, social and economic life which are gradually introduced to him at different stages of school and college education.

A new approach to the experimental component of the science curriculum for the 10-year school is also understood to be developed at the NCERT. This will, hopefully, take into consideration the environmental resources available, improvisation, and use of inexpensive and indigenous material in Science and Mathematics activities as well as experiments.

A Few Problems and their Solutions

The compulsory teaching of Science in classes IX and X of the new educational pattern may create a few problems in some secondary schools. One such problem is how to provide facilities for laboratory work in all such schools. Taking an all-India view, not many high schools will have fully-equipped separate laboratories for practical work in Science. It is also not easy to build new laboratories immediately. Apart from funds, which can be a major difficulty, the question of additional land for the laboratory block may also have to be looked into particularly in the crowded areas of towns and cities. As an immediate and stop-gap solution, therefore, we might think of making use of existing facilities in the classrooms. For this, a few of the classrooms might be converted into lecture-cum-laboratory rooms. Special types of small almirah-cum-working-tables can be provided on the walls of the classroom, so that the floor space continues to be mainly used for lecture purposes.

As regards science equipment, the Central Board of Secondary Education has published a list for the guidance of its member-schools. It continued to operate even for the 1984 examination. This list is considered sufficient for one section of about 40 pupils. They can do the practical work in batches of about 20 pupils each. Such a list is given in appendix IV. The number of items mentioned there will have to be increased depending upon the total enrolment in classes IX and X, bearing in mind the fact that 5 or 6 batches of students can make use of the same apparatus and equipment in one day if the school time-table is organised carefully.

The third important problem might relate to orientation of teachers for the new type of Science text-books. All teachers of Science for classes IX and X can be broadly divided into three categories, and programmes of orientation for them can be organised accordingly. One category relates to those who have been teaching Science upto middle stage only but they are qualified to do the teaching upto class X. Their orientation should be sufficiently rigorous. The second category will be of those who are already teaching Science upto class X. Their knowledge of the content is apparently better than that of the first category. They should be given special orientation in the new material now introduced in the text-books and the new approach to be adopted. The third category will comprise those who have a master's degree in Science and are presumably teaching upto class XI. Their knowledge of the content will be relatively more sound, but they ought to be oriented towards the new philosophy of teaching Science under the 10+2+3 pattern.

For orientation of teachers of Science of the member-schools of the Central Board of Secondary Education, the NCERT has formulated a programme of summer institutes. Accordingly, the directors and resource persons of the institutes in Physics, Chemistry and Life Sciences have already been trained through appropriate workshops. Similar programmes of orientation can be launched in each State and Territory with the help of its own Institute of Science or the departments of science of the colleges and universities in its jurisdiction. Continuous enrichment of both the content and methodology is important for all teachers, but more specially for teachers of Science including Mathematics. It is estimated that knowledge in science doubles itself in seven to ten years. During the working life of a teacher, therefore, the gap between what he knows and what he ought to know gets magnified manifold. This can be reduced only by an effort at continuous refreshing of the knowledge. That is why there is a growing realisation in many countries that teachers should be enabled to undergo at least one refresher course during each period of three to five years.

It may be mentioned that the NCERT is contemplating the establishment of a Centre for Continuing Education for the benefit of school teachers in every district of the country. The centre can be located in a college of education or a zilla school. It is reported that about one hundred such centres have already been set up. In the initial phase the NCERT assists the State government in establishing the centres, supplies them the projection equipment, films and other teaching aids and gives financial assistance to strengthen library facilities in the centre. The NCERT is also arranging orientation courses for the key persons in the field of academic work and supervision of the centres. These centres are expected to strengthen the programme of refresher courses for the teachers in a big way. A larger number of the teachers will now be able to benefit than was previously possible through the summer institutes. The centres will not only help the teachers to broaden their horizon generally but also to learn specifically the latest developments in the field of improved educational techniques in teaching Science and Mathematics and other subjects. These centres will also contribute to economise the non-productive expenditure on T.A. and D.A., for 80 per cent of the expenditure on each summer institute is understood to be incurred on T.A. and D.A. only.

As a further help to teachers of Science particularly, it is desirable to develop good teacher's guides. Once such guides and text-books have been introduced in the classroom, it becomes important for the teachers to evaluate the progress of the individual student and the class as a whole, so that he may modify his own preparation of lessons and his method of teaching. For this purpose, he has to formulate test-questions on modern scientific lines in the manner we have indicated in Chapter III. In fact, there is a case for organising a question bank in each school with the help of which the teachers can test the knowledge, understanding and skill of the pupils.

7

VOCATIONALISATION OF HIGHER SECONDARY STAGE*

Curriculum to Meet Needs of Society

In Indian education, Gurukulas constitute the most ancient form of educational institutions. The courses given in them covered religion, philosophy, language, etc. The Maktabs and Madrasas, which followed during the medieval period, had more or less the same status. The religious education was later supplemented (and finally replaced) by humanities because man had the need to know about his history and environment as well as methods of measurement and calculation. This was also the stage of liberal education as brought to us from the West. Then came the development of modern sciences in the 19th century and they were added to the content of education. The latest to emerge in this field have been engineering, technology and methodology. And these were also duly incorporated in the content of education becase they helped us to meet the felt need of economic development of the society.

Existing Vocational Schools

As has been stated, vocationalisation of higher secondary education is an essential element of the 10+2+3 pattern. This is to be achieved through the organisation of a vocational stream in the

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*Some portions of this chapter are based on the author's article entitled. "The Education and Training of Out-Of-School Youth" printed on pages 181-192 of *Youth and Development in Asia & The Pacific* (Report of the Commonwealth Asia-Pacific Regional Youth Seminar held in July-August 1971 in Kuala Lumpur), published by Commonwealth Secretariat, London. Those portions are valid even today.

new classes XI and XII irrespective of where these classes are located: with schools, with degree colleges, or in separate institutions with or without some lower school classes.

An all India survey of technical institutions conducted by the Indian Institute of Applied Manpower Research as a part of the third educational survey of India has brought out* that in the year 1973 there were in the whole country 6,052 technical, vocational and training institutions. (the 1,200 or more schools of education where teachers of primary and middle schools are trained are not covered by the survey), where the admission requirements ranged from a pass in the higher secondary to the middle examination or class V for different institutions or for different courses in the same institutions. The distribution of such institutions is given in the table. This data was published in 1977, by which time the number of institutions might have increased.

The abovementioned institutions serve to provide information regarding the ongoing facilities for vocational training at the secondary and higher secondary stages of education. The proposed vocational stream at the +2 stage has, therefore, to be taken to supplement the existing facilities for vocational education. It will strengthen general education and make those school leavers, who do not wish to go in for higher education or are not capable of making full use of that education, a more employable material. It will also broaden the base of general education, because vocationalisation is an integral part of the process of education.

Vocational Courses Outside Schools of General Education

A point has sometimes been raised that it might be better to organise vocational courses at the higher secondary stage in separate institutions and to allow academic courses alone to continue in the existing institutions of general education. The argument given is that vocational training organised in separate institutions may be more efficient. While this reasoning may be valid to some extent, particularly in the beginning of the new programme, there are several important advantages in providing the vocational stream

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**Directory of Technical and Vocational and Training Institutions* (Prepared under the third All India Educational Survey), I.A.M.R. Report No. 2/ 1977-Directory, Indian Institute of Applied Manpower Research, Indraprastha Estate, New Delhi, 1977. 1-1018.

TABLE

Recognized Institutions Training Students for Middle Level Work Employment

1.	Polytechnics	327
2.	Industrial Training Institutes	365
3.	Junior Technical Schools	266
4.	Craft and Handicraft Schools	470
5.	Industrial and Technical Schools	1,394
6.	Agricultural Schools	105
7.	Forestry Schools	37
8.	Veterinary and Animal Husbandry Schools	21
9.	Nursing, A.N.M. and Health Visitors Schools	526
10.	Pharmacy Schools	24
11.	Other Para-Medical Schools	68
12.	Schools for Training in Cooperation	73
13.	Commercial Training Schools	63
14.	Commercial Training Institutes (Coaching in Type-writing and Short-hand and preparing for recognized exams. Recognition given only in Andhra Pradesh 904, Maharashtra 805, and West Bengal 118 in the year 1973)	1,827
15.	Schools for Village Level Officials	97
16.	Fishery Schools	51
17.	Schools for Music, Dance, Drama, etc.	194
18.	Schools for Drawing and Painting	62
19.	Other Schools	82
	Total	6,052

along with the academic stream in the same higher secondary schools. These advantages include the following:

(i) The change-over of pupils from one stream to the other will be easier;

(ii) the number of pupils offering a particular vocational course being small, it will be too expensive for separate institutions to provide for teachers of general education which will also be necessary in the vocational stream;

(iii) expenditure on constructing buildings for the separate institutions can be avoided and the same funds used to supplement the existing scarce resources to strengthen education in the ongoing intitutions;

(iv) the provision of academic and vocational studies under the same roof with combined teaching for both batches (academic and vocational) occasionally and joint programmes on the playground and in other co-curricular activities will contribute tremendously to bridge the gap between the white collar and the blue collar jobs and help the growth of an integrated personality; and

(v) above all, the charge against general education not enabling the students to participate in the material development of the country and continuing to turn out unemployable boys and girls, will hold water unless we offer to organise skill training also in the scheme of general education through appropriate courses.

Thus, the balance of advantages will appear to be in favour of organising the academic and the vocational streams in the same institution.

I have attempted to answer the above point instead of just stating that it is too late to raise it because it has been under debate in various forums for nearly 20 years, since the constitution of the All India Education Commission in 1964, and the same has already been incorporated in the national policy statement on education. Curiously enough, this point is also being raised sometimes by the teachers and administrators of general education. To them, particularly, I have an additional argument to give. They have been taught and they in turn have been teaching others that the objective of education is total development of a pupil. I ask how can this development be total unless the pupil has also been educated to find work for himself and thus look after his economic needs, which in the world of today is extremely important.

Objective and Proficiency

The objective of the vocational stream is to prepare the student for some vocation in life and thus to enable him to choose a course which is generally terminal in character The terminal character of the course must not be understood to mean that the student has entered a blind alley and he can never go in for further studies in general, professional or any other field. We should start thinking and planning for further education of those vocational course students who wish to have that education. I would also suggest that a specific provision should be made to enable those vocational students, who are talented or others who later change their mind and wish to carry on higher studies in any branch, to do so with some additional education which may be found necessary. Making of such a provision in the prevalent social conditions of India should be considered crucial for the success of the vocational stream. Without this facility, children from upper strata of society and talented children may not join the vocational courses in sufficient numbers. This would weaken the scheme of vocational courses and make it worthless.

The vocational stream should thus provide knowledge, know-how and practical experience in one vocation, carefully chosen out of areas of work relating to:

(a) Agriculture (Including Animal Husbandry, Poultry and Fishery)
(b) Trade and Commerce
(c) Public Services (Secretariat, Para-medical, Insurance, Banking, Marketing, etc.)
(d) Industry
(e) Education, and
(f) Others.

The proficiency aimed at should in each case be of such a high order that it enables the student to enter the world of work as an enlightened and efficient person. This world of work might relate to service or to self-employment.

Scheme of Studies and its Organisation

As regards scheme of studies for the vocational stream, the following guidelines are suggested:

(1) The duration of the course may vary from 1 to 3 years, depending upon requirements of the particular course. In other words, the functional make-up of the trained person is to be first

determined in consultation with the potential employers and others concerned. The knowledge and skills required to be provided to reach the prescribed level of competence is to be then laid down. The time required to give this knowledge and training then becomes the period or duration of the particular vocational course.

(2) The course-content, including the training and practical experience, should be such as to equip the student very well to get a job or to establish himself as a self-employed person, depending upon his choice and circumstances.

(3) The particular courses to be introduced in any institution should be locality-oriented. They should be selected on the basis of a demand survey already carried out to find out the potential for work opportunities in the neighbourhood or the region. These surveys may be organised on district basis. Apart from ascertaining the level of skill required for each occupation, information should be collected with respect to: (i) job opportunities by occupations in the foreseeable future, say 5 years, expected to be created as a result of expansion of the existing establishments, (ii) replacement needs of existing establishments, (iii) manpower needs of new and emerging establishments or projects, (iv) employment potential of the areas in which employment could be generated in the light of economic characteristics of the district, (v) avenues for self-employment, (vi) current figures of unemployment in the district, (vii) training facilities available and programmes for extension of such facilities during the next few years, (viii) outturn of educated persons with matriculation and higher qualifications, and (ix) mobility of the job seekers.

(4) While vocational stream and higher secondary stage should concentrate on courses of non-engineering character, a few of the courses could also be chosen from out of those already introduced in general polytechnics, women's polytechnics, agricultural polytechnics, and equivalent vocational institutions, provided such courses indicate enough work-potential. It is financially, socially and educationally better to introduce such courses in institutions of general education than to open additional polytechnics for them. Unnecessary duplication should, however, be avoided.

(5) In this connection, some courses, based generally on entries in the registers of Employment Exchanges, could be as under:

(a) Secretarial Practices
(b) Business and Commerce
(c) Catering Technology
(d) Maintenance Mechanic's Course
(e) Nutrition and Cookery
(f) Interior Decoration
(g) Horticulture
(h) Fruit Preservation
(i) Computer Programming
(j) Medical Laboratory Technology
(k) Optometry and Orthoptics
(l) Nursing
(m) Education
(n) Dress-Making
(o) Draftsman's Course
(p) Book Production (Translation, editing, lay-out, proof-reading, pricing, distribution and sale)
(q) Beautician's Course
(r) Pharmacist's Course

It has recently (July 1983) been stated by the concerned authorities that about 23,000 job opportunities are currently available in the field of computer programming. Similarly, a large number of persons duly trained as pharmacists, auxiliary nurses, mid-wives and health visitors are needed in the expanding sector of health services. All of them can be trained through the vocational stream of the +2 stage. In the case of pharmacists, it has been added that if they are trained as per the prescribed standard of the Indian Pharmacy Council, the council is agreeable to invest in laboratory and other infrastructural facilities needed for the training.

Some other vocational courses may also be suggested on an *a priori* consideration only:

1. Farm Machinery and its Maintenance
2. Tractor Operation and Maintenance
3. Seed Production Technology
4. Sericulture
5. Bee-keeping
6. Canning of Foods and Vegetables

7. Garden and Nursery Management
8. Milk and Milk Products
9. Sheep and Goat Production
10. Livestock Health
11. Pig Husbandry
12. Fish Culture
13. Fish-Seed Production
14. Bakery and Confectionery
15. Child Development and Care
16. Health Worker
17. Farming (and not agriculture)
18. E.C.G. and E.E.G. Technician
19. Radiographer
20. Dental Technician
21. Pharmacist or Compounder
22. Pathological Assistant
23. Salesmanship and Marketing
24. Receptionist
25. Telephone and Telex Operator
26. Library Assistant
27. Audio-Visual Technician
28. Accounting and Auditing
29. Stenography
30. Laboratory Assistant

(6) Education as a vocational course should be planned to be an alternative channel to train primary school teachers. The professional training to be given under the umbrella of the academic and vocational streams to be available in the new classes XI and XII should be better than that given today in schools of teacher-training. For, in addition to the required training in methodology, etc., each prospective teacher could be helped to improve his knowledge of the subjects he has to teach in primary schools. He should also be given a more broad-based professional training with knowledge of syllabus-making, book-review, supervision of primary education etc. Of course, satisfactory arrangement for practice-teaching will have to be made for education like the arrangement for corresponding practical experience in other branches of the vocational stream.

(7) The list in para (5) is only illustrative. It is not even

suggestive, nothing to say of its being exhaustive. The actual list can be worked out only through the method indicated in para (3). As such, there cannot be a common list of subjects for the whole country. It may even vary to some extent from region to region within the same state and school to school within the same region.

(8) It may in this connection be desirable to examine the training programmes currently conducted by various (district) authorities for meeting their trained manpower requirements so as to explore the possibility of bringing these courses within the ambit of proposed vocational stream. It would also seem advisable to combine some of the smaller duration courses into composite courses so as to train persons who could look after a cluster of inter-related activities. As examples of the former type, mention may be made of veterinary services at lower or middle levels of the specialist hierarchy, secretaries of co-operatives, panchayat secretaries, health personnel, graders of agricultural produce and their marketing and marketing extension. The latter variety of (composite) courses could be dairy and poultry farming and breeding, sheep breeding, wool shearing, sericulture etc., combined in suitable groups depending upon local conditions and requirements. Such composite courses will also pave the way for economically viable self-employment ventures consisting of more than one activity.

(9) For the success of this new programme, it is highly desirble for each institution to make a collaborative arrangement with the concerned establishment (factory, concern, office, hospital, bank, company, hotel, etc.) in the region in terms of the following areas :

(i) *Syllabus*: The syllabus should be prepared in consultation with the concerned establishment(s) to suit the needs of their and similar other organisations.

(ii) *Teaching*: Some of the teaching and training should be done by selected officials of the relevant establishment(s) on part-time basis.

(iii) *Practical Experience*: The concerned establishment(s) should agree to provide for supervised practical experience to the students in their premises under real conditions.

(iv) *Internship*: The concerned establishment(s) should agree to accept selected students of the particular course(s) as internees under the Apprenticeship Act of 1961 or otherwise with the proviso that if their work is satisfactory, they will be given regular appointments.

(10) Full-time teachers for the vocational stream can be made available through one or more of the following possibilities:

(i) Orientation of selected existing teachers, e.g. teachers of Agriculture, Commerce and Physics.
(ii) Recruitment (on full-time or part-time basis) of qualified and suitable persons already working in the relevant establishments or organisations.

(11) Every student of the vocational stream should be taught at least one language and its literature, greater weightage being given to the language part. This can be any one out of the regional languages, or English or Hindi.

(12) The course-content of each vocational subject should include the relevant theoretical knowledge of the allied branches on the academic side. While all such knowledge has to be given, the subject should not be over-loaded with the same, because the emphasis here should be on job-preparedness. For the purpose of a more economical utilisation of the teaching personnel and the institutional building and otherwise, it is desirable to hold common classes for students of the academic and the vocational streams with respect to those portions of the academic subjects which may be common to both the syllabi.

Syllabus Formulation

It has been stated in the last two paras above that every student of vocational stream should be taught at least one language and given the relevant theoretical and practical knowledge, emphasis being on job-preparedness rather than academic competence. It is thus advisable to have a comprehensive and self-contained syllabus for each of the vocational courses so that the connected academic and other knowledge required for a particular vocation is interwoven in that syllabus itself. The objective should be that the student who satisfactorily completes the vocational course is fully prepared either for self-employment or for service in the respective vocation or for pursuing a higher course of study, if any, in that vocation. In case the vocational course is not comprehensive in itself the tendency will be, as it happens today, for the students to again enter the portals of university for the traditional academic studies and the purpose of the new structure to prevent uncalled for rush to academic courses in the university will be defeated. It should be mentioned that wherever necessary and possible, for academic and other considerations, teaching of parts of syllabi common to both the vocational and the academic streams may be done together.

The special committee on Reorganisation and Development of Polytechnic Education (Damodaran Committee) set up by the Union Ministry of Education and Social Welfare in 1970 has, in its report, recommended diversification of the courses presently available in the polytechnics of India. It has also suggested that courses in Business and Commerce should be added to the existing courses because they are closely related to industry, for which the polytechnics are to produce technician-level workers. The special committee has suggested the following syllabus for course in Business and Commerce. I would like to endorse this syllabus except that the compulsory language may be English or the regional language depending upon the medium in which the business and commercial work is carried out in the region.

I. *Compulsory*
(a) English
(b) Commercial Arithmetic
(c) Commercial Geography
(d) Elements of Commerce
(e) Book-keeping and Elements of Accountancy
(f) Elements of Business Organisation and Management including Office Management

II. *Optionals*: One out of the following may be offered:

(a) Advanced Accountancy and Auditing
(b) Cost Accountancy
(c) Income-tax Practice
(d) Stores, Purchase and Control

(e) Materials Management and Transportation
(f) Inventory Control and Store Layout
(g) Market Study
(h) Advertisement and Display
(i) Export and Import Business
(j) Distribution Trade
(k) Insurance and Banking
(l) Company Law and Company Secretarial Practice
(m) Factory Laws and Regulations
(n) Data Processing
(o) Office Equipment and Systems.

Mention in this connection may also be made, as an illustration, of the exercise in syllabus formulation done by the Central Board of Secondary Education for its member-schools spread all over India (and abroad). Every student opting for the vocational stream in the 1984 examination of the board had to study the following subjects:

I. *Compulsory*:

(i) One language—One Paper of 100 marks
(The languages available being English, Hindi, Assamese, Bengali, Gujarati, Kannada, Marathi, Malayalam, Manipuri, Oriya, Punjabi, Sindhi, Tamil, Telugu, Urdu, Sanskrit, Arabic, Persian, French, German, Nepali, Portuguese, Russian and Tibetan)

(ii) General Foundation Course—One Paper of 100 marks

II. *Elective* :

Any three subjects from the commercial group or one subject from any other group as under; total of the maximum marks being 300:

Commercial Group

1. Office Management and Secretarial Practice : One Paper of 100 marks
2. Accountancy and Auditing : One Paper of 100 marks
3. Typewriting (English or Hindi) : One Practical Examination of 100 marks
4. Stenography : One Practical Examination of 100 marks

5. Marketing and Salesmanship : One Paper of 100 marks
6. Purchasing and Store-keeping : One Paper of 100 marks

Engineering Group

7. Basic Electrical Technology
    - Paper I (Electric Circuits) : Theory 40 marks and Practice 60 marks
    - Paper II (Electric Machines) : Theory 40 marks and Practice 60 marks
    - Paper III (Domestic Appliances) : Theory 40 marks and Practice 60 marks
8. Basic Electronic Technology
    - Paper I (Electric Circuits) : Theory 40 marks and Practice 60 marks
    - Paper II (Basic Circuits) : Theory 40 marks and Practice 60 marks
    - Paper III (Principles of Television System) : Theory 40 marks and Practice 60 marks
9. Air Conditioning and Refrigeration Technology
    - Paper I (Refrigeration) : Theory 40 marks and Practice 60 marks
    - Paper II (Air Conditioning) : Theory 40 marks and Practice 60 marks
    - Paper III (Maintenance, Servicing and Control) : Theory 40 marks and Practice 60 marks

Home Science Group

10. Nutrition and Food Preparation
    - Paper I (Basic and Applied Nutrition) : Theory 70 marks and Practice 30 marks
    - Paper II (Institutional Food Management) : Theory 30 marks and Practice 70 marks
    - Paper III (Food Preparation) : Theory 30 marks and Practice 70 marks
11. Textiles and Designs (Printing Group)
    - Paper I (Designing) : Theory 30 marks and Practice 70 marks

Paper II (Textile Craft) : Theory 30 marks and Practice 70 marks
Paper III (Printing) : Theory 30 marks and Practice 70 marks

12. Textiles and Designs (Weaving Group)
Paper I (Designing) : Theory 30 marks and Practice 70 marks
Paper II (Textile Craft) : Theory 30 marks and Practice 70 marks
Paper III (Weaving) : Theory 30 marks and Practice 70 marks

13. Dress Designing and Making
Paper I (Designing) : Theory 30 marks and Practice 70 marks
Paper II (Drafting and Paper Pattern Cutting) : Theory 30 marks and Practice 70 marks
Paper III (Cutting and Tailoring) : Theory 30 marks and Practice 70 marks

Agriculture Group

14. Marine Fisheries
Paper I (Salt-water Culture and Processing Technology) : Theory 30 marks and Practice 70 marks
Paper II (Marine Prawn Culture and By-product Culture) : Theory 30 marks and Practice 70 marks
Paper III (Molluscan Culture and Fishing Technology) : Theory 30 marks and Practice 70 marks

It must be mentioned that in this scheme of studies a student can combine one or more of the vocational subjects with the academic subjects provided the total of the maximum marks under all the elective subjects taken together is 300. He can also offer upto two additional subjects, if he so desires, either from the academic subjects or the vocational subjects or a combination of the two. In case he offers two or more academic subjects, he will be tested in SUPW instead of the General Foundation Course.

The facility given to the student to combine the academic and the vocational subjects is acceptable on idealistic pedagogic considerations, but it cannot be considered to be the best arrangement for the growth of vocationalisation. Perhaps, this arrangement particularly suits the special circumstances of the schools of the board which are dispersed all over the country (and abroad) and are generally located in urban areas or special places. I understand that many of the schools have not provided for the vocational stream in any significant manner. In my view, appropriate vocationalisation is called for in the case of the board schools too and a section of the students enrolled there also stands to gain from the same. Further, the board should fall in line with the national effort at vocationalisation and exert more in this regard than it has done so far. If this is done, the board and its member-schools will make a success of the vocational courses too.

General Foundation Course

Report of the Adiseshaiah review committee, already referred to before, has emphasised the need to introduce a general foundation course for each vocational student. It has suggested the following allocation of time under the vocational stream :

Subject	*Time Allocation*
Language(s)	15%
General Foundation Course	15%
Vocational Subject (s)	70%
Total	100%

The general foundation course in respect of a vocational student thus corresponds to the Socially Useful Productive Work in the case of students of the academic stream.

In sub-para (12) of the Scheme of Studies and its Organisation in this chapter I have emphasised the fact that the course content of each vocational subject should include the connected academic knowledge so that it is self-contained in character. The general foundation course can be taken to be an expression for the same idea. Vocationalised knowledge and the development of the related skills may *per se* not be enough to enable a person to enter life and set up his own establishment, howsoever small it may be. The proposed general foundation course should fill in the gap and provide a more rounded syllabus. It should provide the vocational student with knowledge relating, for example, to causes of economic backwardness in India, personal qualities needed in entrepreneurship, cooperatives, credit facilities, management of small establishments and adaptability to changing situations. It has been recommended to comprise of two portions : (i) that which is common to all vocations, and (ii) that which is specially relevant to a particular vocation.

This suggestion of the committee deserves to be supported. It requires to be processed further for implementation by the various curriculum making bodies in the country.

Characteristics of Vocational Training

Studies have revealed that training in the vocational stream of higher secondary schools and other vocational institutions should fulfil some specific requirements. These include the following :

(i) The training is for a specific occupation or occupational family.

(ii) The training is based upon an uptodate analysis of the occupation as practised by successful and efficient workers.

(iii) The instructional environments approximate the present working conditions of the occupation.

(iv) The instructor has had appropriate training and experience in the field in which he is providing the training.

(v) The course is inclusive enough for the student to develop competence on a given occupational level.

(vi) The instruction includes skills, related technical and scientific and other knowledge, understanding, attitudes, safety habits, and connected information essential to success in the occupation.

(vii) The student enrolled has made a tentative vocational choice based upon his interest and aptitude.

Vocational Guidance

Effective vocationalisation of higher secondary education will call for some reorganisation and strengthening of the existing educational and vocational guidance service in the institutions. At the school stage, the services of the limited number of counsellors and career masters may be concentrated in those institutions where the vocational stream has been introduced. These persons should help the pupils in the choice of the stream and the particular subject(s) at the time of admission to the new class XI. They should also build up a clearing house unit or an information corner in their institutions and guide and help the students in finding opportunities for work or employment or further training, as the case may be.

Review of Multipurpose Schools, etc.

It is known that the Central government in collaboration with I.L.O. and U.N.I.C.E.F. initiated some years back a scheme under which pre-vocational training in Fitting, Turning, Sheet-metal Work, Welding, Carpentry, etc., was provided for 3 years to the school leavers entering these centres. There were more than 60 Pre-Vocational Training Centres including 2 Regional Centres, which catered to the needs of the country. These centres were attached to higher secondary or multipurpose schools. It has been noticed that a large majority of the trainees from these centres do not settle down in occupations but pursue further education or training in schools of general education, Industrial Training Institutes, Junior Technical Schools or other institutions. The employability of the trainees coming out from the centres has also been rather limited.

Post-basic schools are higher secondary schools following the Basic pattern of education. They have not been large in number. Multipurpose and Junior Technical Schools were started during the fifties following the recommendations of the All India Secondary Education Commission. They were 11-year higher secondary schools and a couple of thousand in number. The Multipurpose Schools provided diversified courses (Humanities, Sciences, Agricultural stream, Commercial stream, Technical stream and Fine Arts) one set of which had to be chosen by the student in class IX. The Junior Technical Schools were also 11-year higher secondary schools concentrating on technical courses. The Technical High Schools, belonging to a similar category, exist in the States of Gujarat, Maharashtra and Tamil Nadu only. The practical bias to education given in these schools has not been found very effective.

The instruction given in all these schools, which really belong to the area of general education, needs to be reviewed. It is only proper that they are reorganised to fall in line with the 10+2 pattern of education. Some of them, with better facilities of workshop, farm, etc., should be preferred for introduction of the proposed vocational courses at the higher secondary stage of education.

The Educational, Vocational Surveys

It has already been stated that the particular courses to be introduced under the vocational stream of any higher secondary institution should be locality oriented and should be determined on the basis of a demand survey to find out work opportunities in the neighbourhood or the region of the institution. Mention in this connection should be made of the area skill surveys undertaken by the Directorate General of Employment and Training under the Union Ministry of Labour during the seventies. Beginning with the districts of Bangalore, Ludhiana and Gorakhpur, the survey was extended to twelve more districts : Bilaspur, Kaira, Aurangabad, Kamrup, Gurgaon, Cannanore, Cuttack, Udaipur, Burdwan, Poona, Kanpur and Vishakhapatnam. The purpose of the survey in each case was to coordinate the manpower needs and employment opportunities with the output of the educational and training institutions of the district. The surveys have contributed to provide a better appreciation of the training facilities, both already visualised and those hitherto not contemplated, in the district. An attempt has also been made to identify the occupations and skills where supply is likely to outstrip demand and vice versa.

Findings of the survey provide encouraging data in favour of the policy of vocationalisation of education. Some of the information should also be of interest to the planners and administrators of vocational courses at the higher secondary stage of education in the concerned districts. In the case of Poona, for example, the survey has revealed the trend of middle-level employment in several economic activities. This is indicated in Table I with respect to a few selected activities only. It has also been found that there are several industries which can be set up in the district with the available resources. Their names and the employment potential associated with them is given in Table II. Similarly, Table III lists some of the fields in which unemployed persons of the district can be profitably diverted to self-employment.

The authorities in charge of vocationalisation of higher secondary education in any State will be well advised to study the report, if any, of the area skill survey pertaining to the district in their charge. If the manpower data in such a report relate to an earlier year or otherwise, the authorities can take note of the trends in additional manpower needed in the sector of wage-paid employment as well as self-employment indicated by the report. The authorities can then examine implications of the trends in the context of the existing facilities for education and training and plans for expanding them in the district. For the balance of the manpower needed, they can take up the question of introducing appropriate vocational courses in one or more of the higher secondary schools of the area.

TABLE I

Employment Growth by Economic Activity in Poona District

Economic Activity	*Number of Employees* *1967*	 *1974*	 *1979*
(*1*)	(*2*)	(*3*)	(*4*)
Conservation of Forests	787	682	1,041
Mining and Quarrying	354	350	503
Sugar	1,501	1,878	3,054
Bakery Products	709	1,023	1,579
Dairy Products	793	898	1,388
Foods like Masala, Hing, Papad, etc.	399	983	1,410
Bidi	487	510	853
Cotton Ginning, Spinning and Weaving in Mills	2,935	2,836	3,452
Cotton Weaving in Handlooms	521	566	1,590
Textile Garments	394	777	1,317
Boxes and Packing Cases	169	497	1,094

(1)	*(2)*	*(3)*	*(4)*
Rubber Goods such as Injection Bottles etc.	244	688	917
Rubber and P.V.C. Products	2,359	2,615	3,490
Medicines, Pharmaceuticals and Cosmetics	2,262	3,453	8,417
Synthetic and Plastic Products	994	2,934	3,799
Bricks and Tiles	806	2,142	3,959
Cement Products	445	965	1,689
Steel Products such as Sluice Gates, Steel Plates etc.	1,548	2,503	3,667
Sundry Hardwares	3,052	7,764	13,489
Sugar Machinery and other Machinery	4,175	7,704	10,868
Diesel and Petrol Engines, Cranes and Tractors	6,636	9,881	16,831
Electric Lamps and Fans	1,242	1,531	1,968
Assembly of Motor Vehicles	3,403	9,824	20,670
Motor Vehicle Engine Parts	499	1,651	3,581
Scientific, Medical and Surgical Instruments	830	1,265	1,958
Construction and Maintenance of Buildings	8,635	18,760	28,898
Construction and Maintenance of Waterways and Water Reservoirs	1,168	2,168	6,195
Distribution of Electric Energy	1,652	2,665	5,755
Retail Trade	6,897	11,380	14,222
Transportation (Buses)	2,012	5,039	6,123
Transportation Motor Vehicles (Other than Buses)	810	1,309	1,700
Education Services (Non-Technical)	18,628	27,576	33,902
Recreation Services (Cinema Houses)	497	996	1,503
Lodging and Catering Services	6,972	13,011	19,789

TABLE II

Industries with Scope for Employment in Poona District

Industry	*Employment Potential*
Manufacturing of Foodstuffs	4,500
Sugar and its Bye-Products	500
Textiles (Cotton)	3,000
Textiles (Miscellaneous)	400
Wood and Wooden Products	1,200
Paper and Paper Products	900
Rubber Products	2,300
Chemicals and Chemical Products	13,000
Basic Metals and their Products	18,550
Machinery and Electrical Equipment	37,900
Transport Equipment	4,700
Miscellaneous Industries	3,900
Total	90,950

TABLE III

Important Fields for Self-Employment in Poona District

1. Dairy Farming
2. Retail Selling
3. Bricks and Tiles Making
4. Eating Places
5. Poultry Farming
6. Electrical Wiring and Repairing
7. Food Canning and Preserving
8. Flour Grinding
9. Carpentry and Sawing of Wood
10. Tailoring
11. Blacksmithy
12. Rope Making
13. Khandsari and Gur
14. Oil Expelling
15. Hair Dressing
16. Sheep and Goat Rearing

17. Bakery
18. Fishing
19. Mud Pottery
20. Shoe Making and Repairing
21. Weaving (Powerloom)
22. Weaving (Handloom)
23. Bidi Making
24. Agarbatti and Candle Making
25. Laundry and Washing
26. Wholesale Trading
27. Driving (Trucks)
28. Repairing of Farm Equipment
29. Furniture Making

It should be stated that area skill surveys were not organised with specific reference to the vocationalisation of higher secondary education in India. They also focussed attention primarily on the industrial sector of greater relevance to the ITIs and polytechnics in the country. The districts covered by them are also too few. However, they do provide an experience which should be of some help and guidance in the organisation of the demand surveys under the programme of vocationalisation of higher secondary education, particularly when it is known that the latter surveys will be undertaken for the first time in most cases.

A programme of surveys to serve the specific purpose of vocationalisation of the +2 stage of education has since been planned under the auspices of the Union Ministry of Education and the State education departments. The basic requirement for proper selection of vocational courses in any district or region is to assess the employment potential there and the relevance of the courses to the developmental activities in that area. It is also necessary to identify the higher secondary institutions where the vocational courses should be run successfully so that the students coming out of the courses may get wage-employment or be self-employed suitably. In major areas of activity, the survey should be able to work out the employment potential in existing occupations, the trend of emerging occupations, avenues for self-employment, areas of persistent shortage of manpower, the extent of educational training facilities available in the area, suitability of the institutions to impart vocational education, availability of facilities for on-the-job experience, and other related information and data. The vocational survey of the district or area, as the case may be, should appropriately be repeated after, say 5 years, in order to assess relevance of the existing courses and to monitor the changing occupational trends calling for introduction of new vocational courses. Specifically speaking, the objectives and scope of the survey should be to make an estimate of :

1. The employment potential available with the existing occupations in different sectors of economic and developmental activity, and details of the levels of occupations needed in them;
2. The trend of emerging vocations in the foreseeable future, say 5-10 years;
3. The avenues for self-employment;
4. Areas in which there is persistent shortage of the required manpower;
5. Availability and suitability of the existing institutions to introduce selected vocational programmes in order to meet the required manpower demands and their capacity to run the programmes;
6. The extent to which vocational training facilities are available in the district or the area such as the polytechnics, ITIs, para medical schools; commerce schools etc., to provide the required competence, and the plans, if any, for extension of such facilities during the next few years;
7. The availability of neighbourhood establishments such as farms, hospitals, industries, offices, banks, etc., with which collaborative arrangement for practical instruction can be made;
8. The availability of facilities for on-the-job training for the students during and after the course;
9. The opportunities for apprenticeship training;
10. The turn-out of the educated persons at the secondary, higher secondary and higher levels of education, both in rural and urban areas, and their distribution.

The above listing has been taken out from a mimeographed handbook published by NCERT on the basis of recommendations of a workshop-cum-seminar organised in November 1982.* It has been emphasised that the survey should be conducted by the District Vocational Education Officer (DVEO) under the overall charge of the concerned director of education in the State government, and the former should be given appropriate assistance of field and office staff.

For satisfactory conduct of the survey, the DVEO will need to contact a number of authorities and agencies like the District Magistrate (Planning), managers or employers of industrial undertakings, agriculture/horticultural officers, traders associations, and youth organisations and social workers. He will also need to collect data from various secondary sources such as the district plan, district census handbook, industrial survey report, agriculture survey report, district employment exchange report, census of small-scale industries, enterprise census report and district statistical review. Such vocational education surveys, it is understood, have been initiated systematically in Karnataka, Maharashtra, Uttar Pradesh and a few other States.

Opportunities for Work and Advancement

Studies in some other directions can also be made of each of the selected vocational courses. Such studies should, for example, reveal how the courses are linked to specific jobs and how the concerned person can look to some higher post(s) or he can establish himself as a self-employed person in particular areas of work after successfully completing the course. Table IV gives this information in respect of six courses listed before as examples.

Employment of Vocationally Trained Personnel

It has been observed that a large number of trainees who have passed out from the Industrial Training Institutes are waiting for jobs on the live register of the government employment exchanges. This number was 2.68 lakhs at the end of December 1977 as against the out-turn of 60 to 70 thousand per year (the out-turn during 1977 was 6 thousand). Similarly, the number of diploma holders in engineering (Polytechnic leavers) on the live register at the end of December 1977 was 74,000. This unemploy-

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*[*Handbook for Vocational Survey Workers*, Vocationalisation of Education Unit, NCERT, New Delhi, 1983.

TABLE IV
Courses, Jobs, Promotion and Self-Employment

Courses	*Jobs*	*Promotion Posts*	*Self-Employment*
Secretarial Practices	Accounts Clerk, Audit Clerk, Cashier, Book-Keeper, Bill Clerk, Bank Clerk, Ledger Clerk, Store Clerk, Storeman, Receptionist, Telephone Operator, Record Keeper, Stenotypist, Stenographer and Personal Assistant.	Office Assistant, Office Superintendent, Accountant, Junior Auditor, Senior Cashier, Store Supervisor, Private Secretary, Reporter and Instructor (Typing and Shorthand).	Establish a private coaching/ commercial institute in typing and shorthand, organise a pool of typists, stenographers and accountants for *ad hoc* work of professionals such as lawyers, authors, journalists, shop-keepers, businessmen, and chartered accountants, and undertake on commercial basis shorthand, typing or duplicating work.
Business and Commerce	Salesman, Canvasser, Demonstrator, Order Supplier, Commercial Traveller, Clerk, Purchase Clerk, Clerk or Assistant in export-import organisations, Marketing Clerk, General Clerk in Establishments concerned with	Export Assistant, Export Manager, Purchasing Agent, Sales Supervisor, Buyer and Purchase Manager.	Set up private trade, business, shop, packaging establishment or export and import business.

(*Contd.*)

Courses	*Jobs*	*Promotion Posts*	*Self-Employment*
	wholesale and retail trade, business, small scale industries, import-export houses, export promotion councils, banks, departmental stores and emporia.		
Catering Technology	Housekeeper, Care-Taker, Linen-Supervisor, Laundry Supervisor, Floor-Keeper, Pantry Man, Pantry Supervisor, Steward (Air, Ship and Intitutional), Flight Purser, Hotel Receptionist, Tourist Hostess.	Senior supervisory and managerial positions in hostels, restaurants, hotels, boarding houses, hospitals, clubs, government and private guest houses and as air hostess.	Establish an eating shop, cafeteria, restaurant, bakery, confectionery. dry cleaning plant or laundry. Work as Caterer for marriage and other parties. Take contracts for running canteens in schools, colleges, hospitals, nursing homes, air companies, travel agencies, etc.
Maintenance Mechanic's Course	Motor Mechanic, Scooter Mechanic, I.C. Engine Mechanic, Tractor Operator-cum-Mechanic, Farm Machinery/Implements Mechanic,	Supervisor/Foreman	Establish a private repair and maintenance workshop for all types of automobiles, farm machinery and implement and dairy machinery. Set up agro-

	Machine (Electrical Appliances) Mechanic, Chemical Plant Mechanic.		service centres and customer service units engaged in hiring out of tractors, agricultural implements and their repair and maintenance. Take up hiring of electrical/sound equipment for festive and other occasions.
Medical Laboratory Technique	Laboratory Assistant in various medical colleges, hospitals, schools and laboratories.	Laboratory Technician, Technical Assistant, Technician Tutor.	Organise laboratories for carrying out various types of tests required for patient care, research and development in the field of medical sciences.
Optometry and Orthoptics	Optometrist in medical colleges and eye and other hospitals, Orthoptist in medical colleges and eye hospitals.	Senior Optometrist, Technician Tutor, Senior Orthoptist and Technician Tutor.	Start own establishment as Optometrist, prescribing and dispensing visual aids under the guidance and supervision of an Ophthalmologist. Get gainful employment with various eye specialists and private medical practitioners.

ment situation is not very relevant to the proposed vocational stream at higher secondary stage if the latter concentrates, as suggested, on non-engineering vocations. However, the experience of the Industrial Training Institutes and Polytechnics, which have played an important role in the industrial development of the country for more than 30 years, may be treated as illustrative to counteract misunderstanding, if any, that every successful leaver of the vocational stream of the higher secondary school will be assured a job. The chances of his establishing himself as a self-employed person or entering service will also depend upon the expansion of work-opportunities in the country. But what is definite is that he will be better placed for work or employment than those under the existing system.

Change-over from Vocational to Academic Stream and Vice-Versa

Under an ideal arrangement there should be no streaming of courses or of students into the academic stream or the vocational stream and each student should be free to offer either the academic or the vocational subjects or a combination of the two. But this is difficult to operate in practice by most schools in the country. An option for unrestricted offerings or multiple choice in this regard will make the school time-table too complicated and unwieldy. It is also likely to be beyond the manpower and financial resources of the Indian schools generally. There is, however, a case for flexibility in the streaming in another sense.

It has already been envisaged that the academic and vocational streams are not organised in any school in independent water-tight compartments preventing change-over of students from one to the other. If any student after doing a vocational course in classes XI and XII wishes to change over to an academic course or *vice versa* he should be required to spend some more time in the school and cover such portions of the course which he has not already studied. For this purpose, it would be appropriate to divide the syllabi of both the academic and vocational subjects into units and permit the student to carry over the relevant credit earned by him to the new stream. In case the student is unable to conduct a whole-time study for the purpose of change-over, he should be allowed to pursue a part-time course which may be of somewhat longer duration, as is the practice in West Germany.

Those who are in employment may be allowed some kind of exemption too if the employment is relevant to their vocational studies.

It would appear that with present social, economic and value system in India, change in educational structure alone is not likely to divert a large portion of pupils to the proposed vocational stream. The situation in this behalf will certainly improve if the conditions for the success of 10+2+3 educational pattern (stated subsequently) are properly fulfilled. Till then it would be wiser to make the conditions for changeover from vocational to academic stream relatively more stringent except, of course, in the case of talented persons. The change-over from academic to vocational course should, however, not be made difficult and may even be encouraged. Thus while fairly stout bridges ought to be built linking the vocational and academic streams, it would be a better strategy to introduce some control in the flow of traffic between the two streams and to interweave this control in the scheme itself. An unrestricted freedom to change-over from one stream to the other is likely to create chaos and defeat the purpose of the scheme.

Evaluation or Examination

The examination of students of the industrial training institutes is at present conducted by the State Directorates of Training and Employment under the supervision of the National Council of Technical and Vocational Trades (NCTVT). The examination of students of the polytechnics is done by the State Directorates of Technical Education and NCTVT is not concerned with it. For the latter work, it is understood that there is a proposal to establish in each State a Board of Vocational Training, which should be statutory in character. Which agency should examine students of the proposed vocational stream? For considerations of practical administration of the institutions, it might be desirable to make the State Board of Higher Secondary and Vocational Education (by whatever name it is called) to be responsible for conducting examinations for both the academic and the vocational streams. Bearing in mind the special requirements of the vocational stream, an appropriate scheme of examination will have to be formulated by that board. Standards of training and knowledge should be kept as high as possible and requirements of employability of the successful candidates in the world of work constantly borne in mind.

While the State Board of Higher Secondary and Vocational Education conducts examination of students of the academic and vocational streams in the new classes XI and XII, the existing arrangement for examination of pupils of industrial training institutes and polytechnics may continue. Since the vocational stream will concentrate on non-engineering trades, there will practically be no case for duplication in work. I would, however, suggest that whenever an engineering subject is incorporated in the vocational stream, the same syllabus, training programmes, and evaluation technology, as is operative for that subject in the polytechnics, should be adopted by the State Board of Higher Secondary and Vocational Education. It is to be noted that equivalence of diplomas or certificates in the same vocational subject, whether issued by the State Board of Higher Secondary and Vocational Education or by some other organization, is most essential from the point of view of both the students and the employers. A scheme of continuous internal assessment of each student of the vocational stream similar to the one for the academic stream should also be prepared by the concerned organization and incorporated in the programme of examination.

One aspect of examination reform in the context of vocationalization of secondary education and even otherwise is to provide facilities in classes XI and XII to the student to prepare and pass an examination in one or more subjects at one time in accordance with his need. It will help the student to pursue the study of only that subject in which he is interested rather than being compelled to take a whole group of subjects. In most of the examining boards today, a student can either take an examination in the full course or cannot take the examination at all. The suggested liberation and rationalization will not only reduce wastage and stagnation but also help the students to change-over from one stream to another at any time by offering the subject(s) which he had not studied earlier and the study of which would make him eligible to join the other stream.

Inspection and Direction of Vocational Stream

It is clear that the existing state-level machinery for inspection, supervision and direction of educational institutions will need to be strengthened suitably in order to meet special requirements of the vocational stream. A small pool of supervisors relevant to the particular vocational courses introduced in the state may be appointed at the headquarters by the Board of Higher Secondary and Vocational Education or the State government as the case may be. The inspection panel for each institution should appropriately comprise of experts relevant to the particular vocation. As regards day-to-day supervision and administration of the institution, where the vocational stream has been introduced, it will be in the fitness of things that the Principal or the Vice-Principal should belong to the area of vocational courses.

To make the new programme of vocational education effective and successful, a proper directional machinery will also need to be created in the State. To begin with, a special unit manned by specially qualified personnel and headed by an Additional or Joint Director of Vocational Education might be set up in each Department of Education. This unit should incorporate a permanent machinery for demand analysis (vocational survey) for work-potential and jobs in the region. The demand analysis is to be a continuous process because the nature of jobs or vocations in demand is liable to change frequently and new jobs and vocations are likely to emerge. It is only appropriate that the scheme of vocational education keeps pace with the changing needs and incorporates in its programme the emerging vocations and gives up the decaying ones. In due course, the State government may set up a separate Directorate of Vocational Education.

Coordination between Education and Training

It will be noted that in the modern world distinction between education (academic studies) and training for skills has broken down, because each supplements the other; and such a supplementing is essential in order to complete both education and training. This principle and the fact that the work of education and training is the responsibility of several departments and ministries in the State and Central governments necessitate that proper coordination is established between various agencies handling education and training. Some suggestions may be made in this regard:

(i) It appears highly desirable to have in the Central government a body at an appropriate level to spearhead and coordinate policy matters regarding vocational education and training. It should, among its members, include the potential employers and others who can help self-employment in the field of vocational training. It should also have representatives of the Union Ministries of Agriculture (for vocational courses in rural areas), Health (for para-medical courses), Labour (for use of the Apprenticeship Act and employment exchanges and for help in the demand survey), Home (for courses like secretarial practice and stenography), Finance (for courses in the field of insurance, banking etc.), Industrial Development (for courses in marketing, trade and commerce), and others. The Planning Commission may also be represented on this body. Such a body may start functioning from the very beginning so that it can render proper advice to the States which are concerned with planning, advance action and implementation of the scheme of vocationalisation of secondary education.

(ii) A similar coordinating body may be set up in each State too. It would also be in the fitness of things if the State level work relating to higher secondary education, polytechnics and industrial training institutes (ITIs) is handled by the same department. This means that while separate directorates for higher secondary and vocational education, technical education, and training (ITIs) may continue, their work should at the secretariat level be the responsibility of the same Secretary and Minister. Such an arrangement already exists in few states in the country.

(iii) While the real enrichment of work experience of pupils of the schools of general education will be possible only in the actual institutions/organisations/workshops/establishments connected with the craft or work handled by them, they can also visit the ITI, polytechnic and any other centre of vocational education, wherever one exists in their neighbourhood. Such a visit will enable the pupils to see some interesting and useful materials as well as tools of work, machines etc., in working condition.

(iv) Wherever possible, the pupils of work experience may be taken to the neighbouring ITI several times during an academic session. This will enable those with aptitude for machine work to develop a more sustained interest in that work. Some pupils of this category may also be permitted by the ITI authorities to do their project of work experience in the ITI itself. For this purpose, the ITI authorities may consider providing smaller machines and relevant materials.

(v) The ITI instructors can also be invited to help and cooperate with teachers of work experience in order to raise quality of instruction given by the latter. Similar invitations could also be extended to instructors of the polytechnic and any other vocational institution in the neighbourhood for help in the organisation and teaching of relevant vocational courses.

(vi) The schools of general education should be encouraged to publicise the existence and programmes of the ITIs and other vocational centres in their region. This would enable the school pupils to know the programmes of vocational education and training available in the neighbourhood. This would also enable the authorities of ITIs and other vocational institutions to get better category of pupils for purposes of admission.

(vii) The instructors of polytechnics, ITIs and other vocational institutions can also help in orientation of teachers of work experience working in the schools of general education.

(viii) The Central and State Boards of Secondary Education should permit the ITI leavers to take the high school and the higher secondary examinations as external students. This provision will open avenues for further training or education of successful leavers of ITIs and other centres of vocational education and should, therefore, be considered as highly desirable.

(ix) Those leaving ITIs and other vocational institutions who have already passed high school or equivalent examination may be permitted to join a suitable course in a higher secondary school or in a polytechnic if they wish to do so. The facility visualised in this and the above para will introduce an element of elasticity in the Indian system of school education, which is badly called for and which will be good for both the academic and the vocational courses.

(x) While the existing practice of ITIs offering training in trades which have been standardised on an all India basis through the National Councils of Technical and Vocational Trades (NCTVT) should continue, some selected ITIs may offer on a regional basis training of a higher order in a few trades in order to meet the requirements of local industry and to enable talented pupils to start their career in a higher scale. In this work, help of teachers of neighbouring polytechnics and engineering colleges should be made available on part-time basis.

(xi) Proper coordination should be established between educational and vocational guidance service of higher secondary schools and employment exchanges. This will be helpful to both, for this will provide for a healthy cooperation and save avoidable duplication. The schools can draw on information relating to work, employment and further training available with employment exchanges; and the provision of suitable guidance in schools will reduce pressure on employment exchanges and will rationalize work of the schools and exchanges.

(xii) Each of the organisations responsible for conducting public examination of pupils of ITIs, vocational stream, and polytechnics should have a representative of each of the others. This should help in raising the standard of education and training in the institutions and in enabling each to gain from the advancement made by the other organisations in their schemes of studies and examination reform.

A Review of the Progress

It is noted that among the various States and Territories, which have experimented with vocationalisation of the +2 stage of education, whatever vocational courses have been introduced they are rigidly of two years' duration. Presumably, this has been done to make them coincide with the duration of the +2 stage. It is hard to believe that only such vocational courses have been chosen in which the required job-preparedness can be achieved in just two years and no less or no more. I find that my suggestion regarding locality-oriented character of the vocational courses has been accepted everywhere in the country and it will, therefore, be considered to be only extraordinary, if all the courses already introduced are locality-oriented and at the same time they require two and only two years to give to the student the targeted level of skill. Apparently, the traditional policy in this regard has been followed in respect of the vocational stream too and a syllabus for each vocational course has been laid down which should cover just two years without attention to the standard of the skills to be imparted to the students. I can only hope that in the subsequent phases of development of the vocational courses the elasticity in the duration, suggested earlier in this chapter, will be found to be necessary and the duration (1, 2 or 3 years) will be determined by first finding out how much time will be needed to give to an average student the prescribed standard of vocational skill so that he is accepted everywhere as a fully prepared worker.

It is further observed that the path followed by the concerned States and Territories has varied considerably in terms of administrative set-up, course identification, curriculum design, recruitment and training of teachers, and other connected matters. It is certainly not necessary, not even desirable, that every thing educational must be identically the same all over the country. But the variations noted in the present case seem to be very large and they have occurred mainly because the professional guidance needed by the States and Territories in the very new field of vocationalisation has been lacking. The various governments have tried to do as best as they could on their own. The required guidance can be given only by the Union Ministry of Education, which is in a position to draw on the best talent and expertise available anywhere in India or abroad. It appears to me that in the specific matter under review, the ministry has not been playing an effective role. After the first wave of introduction of the new pattern ending in 1979, there has been a slack period. With a renewed thrust given by the conference of State Education Ministers held in 1981, some more States started serious contemplation to switch over to this pattern and, therefore, to implement vocationalisation as an integral component.

On the administrative front, the Ministry of Education and the Vocational Education Unit of NCERT have continued to be the main organisations in the Central government concerned with vocationalisation. The recommendation made by the National

Committee on 10+2+3 Pattern of Education to establish a National Council of Vocational Education was not supported. An inter-ministerial meeting held in 1979 favoured the setting up of an All India Board of Vocational Education under the aegis of All India Council for Technical Education (AICTE). This board has now been set up in the middle of 1983. I hope the board will be able to provide effective guidance to the States and Territories in the field of vocationalisation of the +2 stage. This guidance is very much needed.

Mention in this connection may be made of two more developments which again have taken place only around the middle of 1983 and which I consider important for the programme of vocationalisation. It has been decided to amend the Indian Apprenticeship Act, 1961, to bring within its purview the vocational students too. So far, only the craftsmen (product of ITIs), technicians (product of polytechnics) and engineers (product of engineering colleges) were covered by that act and the same enabled them to benefit by it. The other development is that the Union Ministry of Education has provided for apprenticeship allowances at the rate of Rs. 200 each for 3,000 vocational students for six months generally in non-engineering trades on an experimental basis. The objective of this provision is to find whether the link-up with on-the-job training will result in better employability of the product of the vocational stream. I have every hope that the employability will improve in case the scheme is properly implemented.

As regards the States, Karnataka has established a State Council of Vocational Education. There is also a separate directorate of vocational education. The diploma in vocational education is awarded by the State Council. In Tamil Nadu, the scheme is administered by the directorate of school education. This State has also set up a high-powered vocationalisation committee as an advisory body. In Andhra Pradesh, the junior colleges in which the vocational courses are offered are administered by the directorate of higher education but they are affiliated to the State Board of Intermediate Education. In Maharashtra, the scheme of vocationalisation has been controlled by the directorate of technical education through its regional deputy directors and the district vocational education officers. It is understood that the programme has recently been placed under the directorate of training and apprenticeship. In this arrangement, the State Board of Higher Secondary Education is to prescribe the syllabi and conduct the examination. In West Bengal, the directorate of school education is the implementing body and State Council of Higher Secondary Education the examining organisation. Uttar Pradesh has appointed Vocational Education Officers in some districts as also the district level advisory committees. Bihar has set up an Intermediate Education Council with expanded powers for post-secondary education in the State. It is to discharge both the implementing and examining functions. In Delhi, the Directorate of Education and the Central Board of Secondary Education are the bodies mainly concerned with implementation of the programme and evaluation of the students respectively.

In the field of curriculum design, Andhra Pradesh has earmarked a quarter of the total instructional time for a period of two years of the higher secondary stage for English. The remaining time is devoted to vocational education and certain supporting subjects. The streaming does not provide scope for horizontal migration of the students. In Karnataka, the vocational stream, like the academic stream, has two compulsory languages with a similar content and a common examination. About 30 per cent of the total time is devoted to these subjects. The remaining time available to vocational students is devoted to vocational electives and the supporting subjects. The ratio between theory and practical work is approximately 1 : 2. All vocational courses, like the academic courses, are of two years' duration and no transmigration from one stream to the other is permitted. The vocational students are examined externally at the end of the 2nd and 4th semesters. In Maharashtra, a blending of the academic and vocational courses has been done. Vocational courses of bifocal nature have been introduced in which a student is allowed to offer vocational subjects in lieu of one language and one optional academic subject. There is, however, some restriction about the combination of courses. For example, a student without Biology as an elective optional is not permitted to offer the paramedical vocational course. The policy of bi-focal character of the courses has been adopted to provide for upward mobility of the vocational students into colleges of general education.

In West Bengal, the State Council of Higher Secondary Education has prescribed a course in which the vocational student has to study, in addition to the selected vocational course, 50 per cent of what the academic student does, so that the remaining 50 per cent can be completed through abridged courses in case a vocational student desires to go in for higher education in a college or university and pursue academic courses only. Thus, only 50 per cent of the total time has been allotted to vocational electives, and only 30 per cent of this time is spent on practical training. This has made the job-preparedness of the vocational students very weak and they are, therefore, largely unsuccessful in entering the world of work for which they are required to be prepared. The bridges for taking the students to the colleges of general education have also not been operative with the result that the scheme of vocationalisation has become unpopular. It is reported that vocational courses were commenced in 99 selected higher secondary schools in 1976-77, but by 1981 their number was reduced to 52 due to lack of enrolment. In Tamil Nadu, the streaming of courses is rather rigid with little provision for transmigration or shift from one stream to the other. Study of two languages (English and Tamil) is compulsory for both the vocational and academic students. They have been allotted 288 periods out of a total of 1,420 periods for all subjects during the +2 stage. The language syllabus is also common for both streams. The basic knowledge needed to study any vocational course has been incorporated in that course itself. The scheme of studies followed in Delhi Territory has already been referred to earlier in this chapter.

In the field of instructional material development, little work has been done at the national level. Not even a strategy for the purpose has been evolved. There is, however, a provision to give financial assistance to the States to get the material prepared by remunerating the authors suitably. The union ministry of education should get model lessons or books prepared, at least in the common vocational subjects, just as it has done so in respect of several of the academic subjects. This will also contribute to standardisation of the courses and setting up of norms. As regards the States, Andhra Pradesh and Maharashtra are understood to have produced no instructional material as such. In Karnataka, the vocational students depend on the lecture notes as well as cyclostyled material given to them by the teacher. Tamil Nadu has produced a number of guide books for the teachers of various vocational subjects. For the Delhi schools as also for its other member-schools in various parts of the country, the Central Board of Secondary Education has recommended some of the previously published books, but books specific to the prescribed syllabus are largely not available. This is also a serious impediment in the success of the whole programme of vocationalisation and the same should be removed early. The responsibility for the failure on this account will then rest on the planners and executors of the scheme and not on economic or social conditions in the country.

As regards the supply of teachers, the deployment of part-time teachers from out of the expertise available in the local community and organisations appears to be a common practice. But the low remuneration is reported to be a hindrance in securing the services of such teachers for all vocational areas. In Andhra Pradesh and Maharashtra, the institution of part-time teachers seems to have functioned better than elsewhere. Norms for the appointment of vocational teachers have also been laid down here and there. In Maharashtra, for example, provision has now been made for one full-time teacher and one instructor for each vocational course. In Karnataka, two teachers per school were sanctioned on regular basis in addition to the part-time teachers. In Andhra Pradesh, the teachers of the erstwhile multipurpose schools were being utilised for certain vocational courses. In Delhi, the services of the existing staff are being utilised for the vocational stream as well.

No programme for pre-service training of vocational teachers has so for been made anywhere in the country. The regional colleges of education of NCERT have also not done much in this regard. They had planned to train teachers for the multipurpose schools. They should now prepare the vocational teachers. In-service training programmes for the vocational teachers have, however, been going on on a limited scale for the last couple of years, and these have been conducted by NCERT in collaboration with the State governments concerned. These programmes have generally run for 2-4 weeks during summer vacation or some other time. Each course covered 40-50 teachers drawn from 2-3 vocational areas. The trainees and resource persons have been provided by the State government and the guidance and supervision by NCERT. It should be added the NCERT has also been organising orientation programmes of shorter duration for the benefit of principals, officials etc., with the object of exposing the key functionaries to the overall concept and philosophy of vocationalisation.

The proof of the pudding is in the eating. The pudding in the present case will be considered fine if the vocational students are well absorbed in the world of work. The present position in this regard is unfortunately not very good. However, some efforts are afoot and the situation should improve gradually. One or two State governments in the country have made special efforts in this regard by directing the recruiting agencies to pay due consideration to the vocational skills acquired by the students and give them preference in selection vis-a-vis others who do not possess the required skills. Self-employment for the vocational students is often highlighted, but the necessary guidance, resources of money and material, and other help are hardly made available to them as a package. This aspect of the scheme of vocationalisation needs to be attended to with the cooperation and assistance of various departments in the State government and of various other establishments within the State. Some suggestions to involve such departments and establishments for mutual benefit have already been made earlier in this chapter.

I should like to add in this connection that a couple of State governments have, under popular demand, taken a few special measures for admission of the vocational students into degree classes of both general and professional education, although only a small percentage of the students are understood to have benefited from these measures. It will be appreciated that this is no solution to the problem, for such steps tend to be self-defeating to the goals of vocationalisation where the vocational courses are expected to lead the students to suitable employment and reduce undesirable pressure on higher education in our country.

8

NON-FORMAL EDUCATION

Importance of Non-Formal Education*

A system of non-formal education is extremely important in the present context of India. Its incorporation in any country's educational system makes that system more useful. With the introduction of the new pattern in India, non-formal education becomes even more valuable to that country. In this pattern, a kind of selective admission after class X is in-built. Further, the addition of one more public examination upto the first degree course may mean more persons leaving the educational system and entering the world of work. For all such drop-outs and others, a well organised system of non-formal education will be a boon. It might thus be urged that proper development and expansion of a non-formal system of education will provide for greater strength and stability to the new educational structure of 10+2+3. Accordingly, the Central and State governments are keen to give all possible encouragement and support to build up a strong and well-spread system of non-formal education.

A person's life has so far been divided, practically in all societies, in two stages: the student life and the working life. During the student life, he received knowledge and training and utilized the same afterwards in the world of work through self-employment or service. After he started working, he never thought of studying; and even if he felt its need, he could get no facility for it. In relatively simpler and static societies of the

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*Developed from the author's article with the same title and published in the *Education Quarterly*, Ministry of Education and Social Welfare, Government of India, April 1975.

past, what he studied or learnt during his educational career was sufficient for his later life. But this is no more valid in modern days of explosion in knowledge, science and technology and of fast changes in practically every aspect of society. Education has now truly become a life-long process. If a person does not want to invite failure in the work he has chosen for his livelihood or does not otherwise wish to live as an obsolete human being, he has to acquire new knowledge and learn new methodologies relevant to him on a continuous basis. For doing this, he should make use of any form of education—formal, non-formal, or informal—whichever is more handy and pertinent to his needs.

There are a large number of young people who are already working in factories and other sectors of employment and are feeling handicapped in their career in the absence of a professional diploma. Similarly, there are students who have to leave their studies half-way for financial or other difficulties and who later wish to avail themselves of any opportunity for improving their employability or prospects for promotion by obtaining further education or training on part-time basis. For want of such facilities there are some students who have been taking examinations of the organizations like City and Guilds of London Institute, London, in various trades such as refrigeration, printing, electrical technician's course, telecommunication technician's course, etc. If proper facilities are made available in our own country for vocational and other diplomas through correspondence or otherwise, there is no reason why the students should look to a foreign organization in future.

CABE and Non-Formal Education

The Central Advisory Board of Education at its meeting held in November 1974 laid special emphasis on the development of programmes of non-formal education. As a general strategy, it urged that the exclusive emphasis on formal system of education should be given up and a large element of non-formal education should be introduced within the system. The scheme of multiple entry and other programmes of part-time education have to be adopted in a big way. At the secondary and university stages, part-time and correspondence education should be developed and all encouragement given for programmes of self-study. All state plans should, in future, include programmes of non-formal education as an integral part of educational provisions and a suitable machinery be set up in each state to formulate, devise and implement programmes of non-formal education, including functional curricula, integrated and inter-linked with the formal system.

With respect to universalisation of elementary education, the Board expressed conviction that the goal cannot be realised through an exclusive reliance on the formal system of education with its single point entry, sequential character and full-time institutional instruction with full-time professional teachers. The Board, therefore, recommended a large scale programme of part-time education for those children who cannot attend schools, for some reason or the other, on a whole time basis. The Board also urged that every state should prepare a concrete and realistic programme which should be made financially feasible through, *inter alia*, the introduction of non-formal elements within the existing system.

In the field of higher education, the Board urged restraint in the establishment of new universities and colleges. In place of this, emphasis should be on achieving expansion through existing institutions and through non-formal channels.

In the field of vocationalisation of secondary education, the Board recommended that in designing the vocational courses, there should be considerable freedom, elasticity and experimentation; and wherever possible, non-formal educational methods, particularly correspondence and evening courses, should be used. Similarly, the Board welcomed and endorsed the proposals of the Union Ministry of Education for providing programmes of non-formal education to out-of-school youth in the age-group 15-25.

The Board also recommended that the programme of functional literacy; which represents the single largest on-going effort of intensive non-formal education linked to a developmental activity, should be strengthened and expanded.

Formal Education

We are all familiar with formal education. It constitutes the age-grade hierarchy of primary, secondary and higher education. It is the traditional system in which the teacher and the taught face each other in a classroom situation on a regular and continuous basis, follow a fixed and pre-determined syllabus, secure promotion to the next class after passing the previous one, take a public examination at the end of the course and receive a certificate, diploma or degree. This system works in a rigid framework and one has to study under the constraints of these rigidities. But the system has continued to function for centuries and has had necessarily to be adopted as a basic system even by those countries where education has been introduced in an organised manner for the first time.

Non-Formal Education

Over the years, a class of persons has grown in many countries who cannot make use of formal education. Their number is increasing every day. These persons include the school-dropouts (who could not complete even the minimum compulsory period of schooling for every citizen), the employed or working persons, those living far away from the centres of education or training, and the housewives, retired persons, and others many of whom are looking for information, knowledge or training without a diploma or degree. Often, such people have experienced a "felt need" for further education, training or intellectual refreshment and are therefore already motivated.

A good portion of the need of such persons can be met through a non-formal system of education. That may also constitute a system most suitable to them. Such a system will include education through correspondence courses, radio or television, language laboratory, seminars, discussions or workshops, demonstration farms, sandwich courses, programmed lessons, paperbacks, popular literature (including that in science), modern public library system, open school and open university.

Informal Education

The individual does not live in a vacuum. He is constantly under the influence of his surroundings. In a way, he 'learns' all the time, from every event, from every experience, and from moment to moment. There is hardly a place or happening, e.g., a market, a hospital, a railway station, a cinema house, a journey, an entertainment party or a court-case, from which something or other is not learnt. If one is observant, inquisitive and alert, one assimilates more and faster. Even those not so gifted receive something which affects their behavioural patterns in life. The education received in this indirect manner may be called informal education. Some people have called it incidental or accidental education.

Definitions

The expressions 'non-formal' and 'informal' education have in the past been used somewhat loosely and sometimes even with interchanged positions. Any education other than formal education has been called either non-formal or informal education. These two have been variously defined as the entire range of learning experiences outside the regular and graded system as an educational "unsystem", and as life-long learning.

Coombs defined (*Prospects*, UNESCO, Autumn 1973) formal education as one which is given through formal educational institutions : a school, a college or a university. He defined non-formal education as one which is imparted through organisations and institutions outside the formal education institutions. A sports association, for example, may educate promising children in various sports. Informal education, according to Coombs, is education which takes place all the time informally or incidentally. In UNESCO parlance, all education outside the formal system is out-of-school education. I would say that *non-formal education is education intentionally given outside the formal system, and informal education means education incidentally picked up in life situations like listening to a broadcast, seeing a puppet show, reading a newspaper, etc.*

It must be added that it is not possible to have water-tight divisions in this regard. The suggested classifications are a matter of convenience and they are not mutually exclusive in toto. Non-formal education can be organised within the framework of a formal educational institution. Field trips, dramatics, club activities and other co-curricular programmes organised in a school can be classified as non-formal or informal in character. Similarly, there can be elements of formal education in a non-formal educational activity. The correspondence courses, for example, for the first degree given by a university do follow a prescribed syllabus, provide for a brief contact programme in which there is regular classroom teaching, and students of the correspondence course take the same public examination and in the same manner as other students of the corresponding formal course.

It should also be stated that the distinction between formal and non-formal education is one of degree and not of kind. The 'formal' system is characterised by rigidities of fixed hours during which a set of people assemble at a determined place and listen or otherwise participate in a teaching process. Usually the students who so assemble and the teachers who give the instruction have certain uniformities in terms of age and educational attainments. But if we remove the rigidities in regard to hours and place of study, type of students, methods of teaching and learning, content of courses, qualification requirements of students and teachers, and methods of evaluation, and still organise a systematic learning process with clear goals of learning, we will have a 'non-formal' educational system which will have different degrees of flexibility and hence different degrees of 'non-formality'.

As regards informal education, it is clearly unstructured education imparted and imbibed through cultural and socio-religious functions as well as through political and scientific processes and social institutions. Though its impact has been great for generations, at least in the Indian way of life, its depth has never been scientifically assessed. Perhaps it cannot be so assessed.

Historical Perspective

Even in the earliest times it was seen that the natural learning which occurred in life was not adequate to meet the needs of life and the people—young and old—so they went in search of teachers. The 'gurukulas' in India, which have been in existence for the last several thousand years, provided non-formal education in the sense that there was no rigid curriculum and the instruction was individualised. With the increasingly complex organisation of society, specially after the industrial revolution in the West, the concept of providing education to children in organized classrooms resembling the factory model became increasingly popular and in due course an article of faith. But with further development of the society, knowledge increased much in quality and variety and the means of acquiring that knowledge grew so diverse that the 'factory model' could hope to cover only a fraction of the needed knowledge and that too only for those who could attend the 'factories' during specified hours.

As the proportion of learning occurring within the school to the total learning needs diminished and as large learning resources became available elsewhere in society, education in schools and learning came to be distinguished from each other. Accordingly, efforts are being made in different countries to build up a non-formal system of education that will supplement the well-known formal system.

That such a system can meet a felt need of the society has already been pointed out. There are several other reasons why such a system is not only feasible but is also a practical possibility. The reasons for this include the following :

(i) The continuing acceleration of knowledge which cannot be imparted within a certain period of life.

(ii) The ever-expanding needs of society and of individuals : more and more persons need to be taught and trained up to increasingly higher levels.

(iii) The ever-present shortage of financial resources, compelling the pooling together of all available resources.

(iv) The increasing need to use a large spectrum of persons to give specialised knowledge and skills in a given area, one or two teachers alone not being sufficient.

(v) The availability of audio-visual media and other aids which are developing.

(vi) The increasing knowledge about the process of learning.

All these reasons apply to the rich as well as the poor nations. For the underdeveloped countries attempting to make headway on several different fronts at the same time and facing grave financial constraints, non-formal education on a large scale is a good solution for maximising returns from the given resources. If education is to reach millions of children and adults, there is no other alternative and a more effective path. There is no doubt that millions have to be reached within a given time span, if genuine development and progress are to take place and the quality of life of the masses of people has to be improved.

To those who consider that education is still synonymous with the classroom, hourly bells and a set of fixed rules, non-formal education will doubtless seem a nightmare spelling chaos in an otherwise well-ordered system. In truth, the concept of non-formal education is founded on hard pragmatic reality: that no socio-economic development is possible unless. (a) every citizen reaches a minimum level of educational maturity, and (b) the educational system provides for continued learning and growth of individuals according to their own pace and need.

Limitations of Formal Education

There is ample evidence to prove that the formal system of education cannot meet all societal, collective and individual needs for instruction, knowledge, skills and behavioural change. Even if the traditional schools and universities are ideally developed and their curricula and teaching methods perfectly elaborated, it is not possible to fulfil all requirements in education through the formal system alone. There are many reasons for it. They include the following :

(i) There is a trend towards democratisation of education. It is neither feasible nor realistic to offer formal education facilities to all people who are in need of some education or training. The obviously restraining factors are the enormous increase in enrolment, rise in educational cost per pupil, limitations of governmental expenditure, and practical difficulties of distance, transport etc. The working class, therefore, thinks that the full-time formal system of education is against their interests and the poor people opine that continuance of the formal system alone shows denial of education to them.

(ii) The environmental differences and the variety of people to whom educational opportunities are to be offered require considerable flexibility in the organisation, content, duration, timing and place of education.

(iii) The rigid patterns of formal education are easily adaptable to the constant evolution of science, technology and society.

(iv) It is against the requirements of life-long education if people who leave the educational system once are compelled to give up for good the use of the educational services.

(v) Formal education, by its very nature, requires continuity, accepts with difficulty the educational values of practical or professional life and responds slowly to new demands and to partial or individual educational requests. This situation is against the realities of present day living.

The Positive Side

There is also a positive side of the case of non-formal education. This reinforces the need for giving a non-formal orientation to the future growth of education. The positive factors are several in number.

The present society has new potentialities for education. The various types of work (e.g. job of a telephone operator and use of gadgets and machines in cleaning, washing, agriculture, industry, etc.), the civic life (e.g. use of electricity leading to replacement of a fuse-wire or bulb), the pattern of modern civilisation (e.g. style of dressing, use of furniture, mode of laying a table, methods of entertainment), and the communication media (e.g. the satellite) are all offering new possibilities of education. In other words, the educational value of non-educational media is increasing constantly. This explains why the trend towards non-formal education has its basis in the fact that everybody can learn in many more ways and in many more different places than ever before.

There are now more facilities, in addition to the teachers and the books of the past, at one's disposal for learning. These include, as stated earlier, mass media, programmed text-books, pocket or inexpensive literature, educational film shows, extension lectures, professional or technical persons etc. In fact, there is hardly any aspect of life where the effort to learn and develop the individual further is not possible.

The human factor also plays an important role in the expansion of non-formal education. In India, for example, besides lakhs of teachers, there are lakhs of other professionals and intellectuals, lakhs of college and university students and voluntary participants in the National Service Scheme, the Yuvak Kendras etc. All of them can contribute their share in developing non-formal educational activities. Our present society is much better equipped to carry out such a programme than its predecessors at any earlier period in history.

Removal of Misunderstandings

It is, however, not correct to think that non-formal education is invariably a better substitute for formal education or that it is only good for people without any formal education, for unskilled or illiterate men and women, and for those in the lower social strata. It should not, in fact, look paradoxical to say that a certain amount of minimum education (literacy at least) through the formal system may be considered desirable before one can make use of the non-formal system on one's own.

It is also not right to think that non-formal educational approach should be adopted only if the conditions for formal education are not possible. The best educational strategy is to provide for a comprehensive educational structure in which both formal and non-formal systems are put to most effective use, depending upon the circumstances and the pupils and objectives to be served.

It is very erroneous to think that non-formal education can be organised without any know-how, knowledge and experience, or professional preparation and methodological training. In fact, non-formal education may be more difficult to organize than the formal or traditional school or college education.

Non-formal education should not be taken to mean a softer kind of education. It may be equally demanding in terms of effort from the students as well as the teachers. Actually, it may call for greater planning and preparation and more and better supervision. While being innovative and flexible in regard to methods and content, it may have to be inflexible in regard to goal and standards.

It is similarly unfair to believe that non-formal education is a remedy for all deficiencies of formal education. On the contrary, non-formal education by itself alone cannot deliver the goods. While this is true, it should also be recognised that non-formal education is by no means a cheap or inferior kind of education.

Integration of Formal and Non-Formal Education

It is important to realise that in modern times both formal and non-formal methods of education have their due places in any organised system of education. In order to develop such an integrated system, we should undertake, among others, the following measures:

(i) Make people understand and realise the potential and value of non-formal education.

(ii) Take out non-formal education from its marginal position and put it in the mainstream of educational theory, planning and practice.

(iii) Establish links between formal and non-formal education and permit switching over from one to the other. For example, it should be permissible for a school drop-out to make up the deficiency through an evening institute, correspondence course or private studies and then join a centre for higher education along with other students who continued to pursue the formal system without a break. This necessitates a change in the attitude of some of our university authorities particularly.

(iv) Make non-formal education an integral component of the educational system by adopting the principle that the important thing is what a person has learnt and not which channel he has followed in his studies. For example, a certificate, diploma or degree obtained through the own-time or correspondence system should be unhesitatingly accepted equivalent to the one obtained through the formal system.

(v) Develop non-formal educational facilities in such a manner as to offer to the young and the grown-ups various opportunities to move from one branch of education to another, to enter freely at various stages and to leave at different points, and to combine a diversity of work and education according to one's circumstances and need.

The success of such measures as above will depend upon the understanding and appreciation with which issues connected with non-formal education are attended to by our educators, planners, policy-makers, administrators and the general community.

The Indian Education Commission of 1966 had recommended the growth of a parallel system of non-formal education in the country. Mathematically, two parallel lines never meet. So, the recommendation should be interpreted to mean that a non-formal system of education should be so developed that it is as comprehensive and efficient as the formal system and that every knowledge or skill, which is attainable through the formal system, should be available through the non-formal system as well. For, unlike the non-meeting parallel lines of the Euclidean geometry, the two systems should appropriately have a number of points of intersection so that any seeker of knowledge or training is able to achieve his ends through either of the two systems or through a combination of both as it suits his circumstances and convenience.

Some Projects in Non-Formal Education

We are not treading on barren soil. Some work in the field of non-formal education has already been done or is going on in various parts of India. A few examples known to me in this regard may be mentioned:

(i) Correspondence courses for the first university degree in many Indian universities and for the master's degree in some.
(ii) Correspondence courses for the school certificates in three boards of secondary education.
(iii) Correspondence courses for the teacher training degree in the five regional colleges of education and the Himachal Pradesh University.
(iv) Correspondence courses for the study of Hindi as a second language by Indians and foreigners through the Kendriya Hindi Nirdeshalaya, New Delhi.
(v) The mobile education *shibers* of Maharashtra (A forum for primary school teachers and community improvement).
(vi) The Delhi Public Library, Delhi.
(vii) The Kisan Saksharata Yojana (The national programme of functional literacy for farmers in the high-yielding variety areas) merged from 1979-80 in the Rural Functional Literacy Programme.
(viii) Extension programmes organised by the Indian Agricultural Universities, the Institutes of Rural Higher Education and other agencies.
(ix) The summer institutes through the U.G.C., NCERT, etc., and other programmes of in-service training.
(x) Educational Extension activities of several universities in India.
(xi) The national programme of workers education organised through the Union Ministry of Labour.
(xii) The Shramik Vidyapeeth (i.e. Polyvalent Centre) at Bombay and Delhi.

(xiii) The orientation programmes organised by National Institute of Educational Planning and Administration, New Delhi, Staff College, Hyderabad, and National Institute of Health Administration and Education, New Delhi.

(xiv) The scheme of school teaching through television in Delhi.

(vv) The national programme of adult education in the Sixth Plan.

(xvi) The Open School in New Delhi. The Open University in Hyderabad.

(xvii) The proposed programme of education through the Indian satellite, INSAT—IB.

In many other countries similar projects of non-formal education appropriate to the prevailing circumstances in those countries have been taken up and are in progress. Two of the most notable examples in this regard may be mentioned: the School of the Air in Australia and the Open University of England. In the School of the Air, teaching is provided through a two-way receiver and the pupils and the teacher may be as far as one thousand kilometers from each other. The Open University in London constitutes the latest and largest experiment in non-formal education. The admission requirements for its courses do not prescribe the possession of any formal schooling, and correspondence, T.V., extension and other possible methods of communication are all utilized for the teaching work.

Building a National Programme of Non-formal Education

Talking of the future, a comprehensive national programme of non-formal education should conceptually cover all kinds of individuals and groups in the country. More specifically, such groups ought to include the following:

(i) Children of age group 6-14 years who have never been to school.

(ii) Children of age group 6-11 years who dropped out of the formal system of schooling.

(iii) Children of age group 11-14 years who dropped out of the formal system of schooling.

(iv) Illiterate persons of age group 15-25 years.

(v) Semi-literate persons of age group 15-25 years.

(vi) Rural adults working in the high-yielding variety areas, doing dry farming, or interested in horticulture, animal husbandry, fishery, poultry, agro-industry, etc.

(vii) Illiterate or semi-literate population of the age 15+ and residing in urban areas.

(viii) Vocational workers needing the upgrading of their skills.

(ix) Working persons who want to upgrade their academic or professional status.

(x) Housewives, retired persons and others who seek knowledge, information or skills mostly for leisure-time activities and without a certificate, diploma or degree.

Building up an effective programme of non-formal education which would ultimately cover the entire population of India is a challenging task before the educators, administrators and policy makers. In terms of knowledge, values and know-how to be imparted, in terms of age-groups, in terms of syllabi and curricular requirements and the terms of the educational methodology and technology to be used, the variety, complexity and magnitude of the task is baffling. As indicated above, the programmes have to span target-groups from the most illiterate to the highly educated persons.

However big and baffling the task, a start has to be made. There appear to be a number of principles which should govern the building up of the programme. The target group should be clearly chosen with priorities of development in mind. In our case, the rural children of age group 6-14 years who dropped out of school prematurely or never went to school and the illiterate and semi-literate youth of the age-group 15-25 are the two priority groups.

A variety of well-programmed material must be built up for these groups taking into account their diverse cultural, economic, and educational levels and occupations. A broad principle should be that while the curriculum is set at national or state level, the syllabus, the method of teaching, and the details be left to the district or even block level with appropriate guidance and supervision. This requires that capability for designing the learning material for non-formal education and for training of teachers should be built in every block and district. A group of persons who understand the developmental and learning needs of children and of adults and know-how to effectively cater to those needs have to be assembled; and with the help of leading experts the latest scientific knowledge in different fields like agriculture, animal husbandry, health, nutrition, and family planning have to be brought into the programme.

Age-group 6-14

For successful organisation of a programme of non-formal education at the primary stage, we will have to bear some crucial considerations in mind. They should include the following:

(i) These programmes should have an element of motivation in order to attract the children to the centres of non-formal and part-time education. Story-telling, drama, *bhajans* or devotional songs, and dance may provide a base for attracting this group of children to the centres.

(ii) The programme may vary from place to place. The rigid approach of the prescribed curriculum and the prescribed text-books may not lead to success.

(iii) The programmes should be related to proficiency in jobs available in the locality. Here the effort should be to help the pupils to acquire skills in processes of production in the earlier stages and more sophisticated training in course of time.

(iv) The programmes should emerge through a solution of problems faced by the pupils while working on different jobs.

(v) The attempt should be to enable the children to join the mainstream of formal education at different points as early as possible and to that extent condensed and simplified courses will have to be planned and provided in the centres of non-formal and part-time education.

Conducting programmes of part-time and non-formal education will not be the same as teaching in the schools. It will call for ingenuity, patience, and organisational work on the part of the teachers. The average teacher or the educated youth of the locality called upon to manage a centre of non-formal education would require special orientation or training, help and encouragement. The teaching techniques utilised in these centres will have to provide for individualisation of instruction. The State Institutes of Education should play a leading role in this field. They may organise regular meetings of representatives of the departments of agriculture, community development, health and nutrition, family planning, Nehru Yuvak Kendras, and adult education in order to discuss issues related to the preparation and supply of appropriate instructional material and the participation of experts in the organisation of demonstrations and discussion groups at the centres of non-formal education.

Age-group 15-35

This is a heterogeneous group. Members of this group play an important role in the society. They are often engaged in productive occupations or are economically viable. Most people get married in this age-group and have to take decisions about the size of their families. They also belong to an age-group at which they are often imbued with curiosity and a thirst for learning. Their educational needs are, however, multi-faced and numerous: they are not simple.

A project called Non-Formal Education for the Age-group 15-25 was launched by the Central government from the beginning of the Fifth Plan. This was to be supplemented by a massive scheme entitled National Adult Education Programme during the Sixth Plan. It was formally launched on 2nd October 1978 on Gandhi's birthday. It visualised giving of adult education to 10 crore illiterates belonging to the age-group 15-35, within a period of five years. In 1947, literacy in India was 14 per cent. It rose gradually to 34.45 per cent (excluding the age-group 0-4) in 1971. But due to population increase the number of illiterates in the country above fourteen years of age also rose from 24.7 crores to 30.7 crores during the same period. According to the 1971 census, the total number of illiterate persons above fourteen years of age was 20.95 crores, of which 9.71 crores were in the age-group 15-35. This figure may at present be around 10 crores. It is this last group which was the target of the National Adult Education Programme.

According to the policy statement issued by the Government of India in respect of the above programme, adult education while emphasising acquisition of literacy skills will also be : (i) relevant to the environment and needs of the learner, (ii) flexible regarding duration, time, location, instructional arrangement etc., and (iii) diversified in regard to curriculum, teaching and learning materials and methods.* This will apparently make the whole programme largely non-formal in character. It may be mentioned in this connection that education and literacy, seen as essential for human resource development, must form part of development strategy. It is on the acceptance of this assumption that the National Adult Education Programme was stated to have been launched. It is a challenging programme full of difficulties in practical implementation. The financial allocation for this programme has, however, been reduced much in the revised Sixth Plan which is under implementation since 1981.

The life experience of the adults is much greater and their psychology, needs, and aspirations different from the children. These factors have to be duly taken note of in providing motivation, preparing instructional materials, and handling the teaching-learning situations. As an illustration, mention may be made of the programme-design evolved by World Education in one of their publications** in which the following principles of instructional methodology suited to the illiterate adults have been mentioned:

(i) Illiterate adults are literate in visual sense: they can appreciate and understand visual presentation such as pictures and photograph.
(ii) The primer by its very definition of being a book discourages the beginning learner because the difficulties faced in getting through the first pages seen like formidable obstacles to reach the end.
(iii) A functional literacy programme should from the out-set present material that is of immediate use to the learner.
(iv) The highly developed memories of illiterates can be used in the designing of a methodology.
(v) From the outset of the programme, emphasis should

***National Adult Education Programme—An Outline*, Ministry of Education and Social Welfare, Government of India, New Delhi, 1978, p. 2.

***Functional Education for Family Life Planning* by Thomas B. Keehn, World Education, 667 Madison Avenue, New York, 1971.

be on content rather than on the instruction of literacy skills.

(vi) A dialogical rather than a frontal teaching approach is better suited to the needs of adults.

(vii) Subject matter derived from the environment and experiences of participants is more likely to facilitate dialogue than a methodology and curriculum designed without relation to the participants. The content of the methodology should, therefore, be situation-bound.

Conclusion

Our circumstances demand that a large scale programme of non-formal education should be built into the growing system of Indian education. Both the formal and the non-formal be integrated into one comprehensive system. But the success of any programme of non-formal education either for children or adolescents or adults will depend upon the understanding and appreciation with which the connected issues are attended to by our policy-makers, planners, educators and administrators. And many of the solutions in this sector of education may call for an unorthodox approach and an unprecedented disposal.

9

TEACHERS AND THEIR TRAINING

Teacher is apparently a central figure in any scheme concerning reform of education. The proposed restructuring of education. cannot be an exception. The reorganisation of school and college classes under the new pattern necessitates revision of minimum qualifications for teachers, wherever necessary, and provision of appropriate pre-service and in-service training in order to equip them to meet the requirements of the new curriculum for both the academic and the vocational courses.

Teachers for Classes IX and X

For those who teach the new classes IX and X, a teacher-training degree with university graduation has to continue to be the minimum qualification. But appropriate provision should be made in the existing programmes of pre-service training of teachers for secondary stage to meet the requirements of the additional dimensions introduced in the new curriculum relating to that stage. For example, in the training of teachers for Science, the project method should also be taught. This method is now considered more suitable for teaching the subject because of the emphasis on the application of science and the development of practical skills. For teachers of Mathematics, training in teaching modern mathematics requires to be appropriately emphasized. In the teaching of languages, training should be imparted in the development of oral skills too; and for that purpose, use of linguaphones and language laboratory should be encouraged. Further, a language teacher should be so prepared that he can preferably teach more than one language. In the courses for B.Ed. or equivalent qualification, provision for training of bilingual teachers may be advisable. During their professional training, the prospective teachers should also be prepared for implementing the scheme of continuous evaluation which is an integral part of the revised scheme of examinations. To realise all such objectives, not only the existing courses for teacher-training will need a review, revision and updating but suitable summer institutes are also necessary for re-orientation of the teachers.

In a way, in-service training is today even more important than pre-service training and, therefore, it would be absolutely essential to put in-service training at par with pre-service training of teachers. With the current explosion in knowledge, methodology and technology, it would appear essential that every teacher is made to undergo an in-service training course at least once in 3 to 5 years. The programme of in-service training will, therefore, have to be tackled on a very large scale so that all the existing teachers are enabled periodically to take advantage of the summer institutes, vacation courses and other refresher courses. The duration of these institutes/courses may vary from subject to subject according to requirements of each State. In some cases the orientation may be of a long duration and in others it may be of a short duration but with greater frequency.

Besides arranging in-service courses in the methodology of teaching, content-orientation will also be essential because of the new elements that are being introduced in the curriculum to make it richer as well as up-to-date. It is presumed that there is an ongoing programme of in-service training in each State/Territory. The NCERT, the Central Institute of English and Foreign Languages, the Teacher-Training Institutes, and the State Institutes of Education, Science, and English have already on their hands programmes of in-service training of teachers. Obviously, these programmes will have to be continued and strengthened. Available resources will also have to be appropriately deployed for expansion of the programmes. In order that the teachers appreciate the need and value of in-service training, the governments and other authorities administering educational institutions should consider providing suitable incentives to their teachers. Continuous internal assessment being a new phenomenon, orientation courses will be required in this area too so that the evaluation is done scientifically and the elements of subjectivity are minimised.

It should be mentioned that in determining the number of teachers required in a school, provision should be made for extra coaching that would be needed by way of remedial teaching for weaker students. The time spent by the teachers on remedial teaching should be duly recognised and the additional hours put in by them counted towards their normal hours of work. In view of the extraordinary attention which a teacher will be required to pay to the weaker students, selected persons alone should be put on the job. This can be possible only if some prestige is attached to this work so that the teachers may not consider it a drudgery. The State as well as other organisations concerned with the improvement of teaching might collaborate in making the programme of remedial teaching effective. In-service training of teachers should cover the technique of remedial teaching as well.

In the case of physical education too special programmes would require to be drawn up for orientation of the teachers. Physical education has, so far, not received the attention it deserved. Due place has, therefore, to be given to compulsory physical education in all schools and for all children. Minimum number of hours to be put in by each student in a year for receiving physical education should be prescribed as is done in the case of the academic courses. Refresher courses for Physical Education Instructors could be organised in collaboration with the colleges of physical education. Appreciation of the importance of physical education should be a part of the training of all teachers.

Moral education is a subject where new ground will have to be broken. Our teachers today are not fully aware of how and what to teach by way of moral education. There is hardly any need to emphasise the necessity of inculcating in the young minds the basic values of life. Some schools are already using a few text-books to teach moral education. A brief study of some of these books has revealed that without emphasising any particular religion they serve a useful purpose for imparting moral education. More books as recommended by the Sri Prakasa Committee have to be written to meet this requirement. Some moral education can be imparted through class-room teaching, but more through cultural activities and community service. Orientation courses for teachers to impart moral education in a proper manner are very important.

Teachers for Academic Stream

So far as the academic stream in the new classes XI and XII is concerned, it is clear that a person without a postgraduate qualification can not do justice to the teaching work. It may be noted that in pursuance of the Mudaliar Commission, post-graduate qualification is even today laid down for teaching class XI of the higher secondary stage. Since one more class, i.e. class XII is to be added under the new pattern and as the curriculum of classes XI and XII will have advanced courses, a person not possessing a post-graduate qualification will find it very difficult to handle the subject concerned. The requirement of a post-graduate degree will also be in consonance with the existing practice of insisting upon a post-graduate qualification for teachers who are teaching corresponding pre-university classes under a university. Keeping in view the requirements of the syllabus, it should also be approprite to insist that the teacher should have obtained a second division or at least 45 per cent marks in his master's degree in the subject concerned.

For teaching the new classes XI and XII, a good master's degree is so essential that if we have to choose between such a degree and a regular teacher-training qualification, we should vote in favour of the former. However, a short training of about 3 months duration immediately after recruitment should be very desirable. This will acquaint the teachers with the methodology of teaching, psychology of the adolescent pupils, management of classes, technique of continuous evaluation, etc.

The question of personnel, i.e., principals, teachers and other staff required for the institutions, where the new classes XI and XII are to be started, has to be examined carefully and well in time by each State and Territory. Where there is a shortage of teachers, timely steps will have to be taken to train (or find and select) persons of requisite qualifications. In the case of existing teachers who are without a post-graduate degree but are still required, for certain unavoidable reasons, to teach new classes XI and XII, one or both of the following two possibilities might be acted upon:

(1) Those who are young in age could be asked to obtain the regular post-graduate degree. The government might help them in securing admission and even financing their

studies. Suitable provision could also be made for study-leave etc. for them.

(2) Those who are elderly and have a long experience could undergo a condensed post-graduate course of studies and the diploma which they get at the end of such a course should entitle them to receive the salary scale meant for post-graduate teachers. For this purpose, one or more selected universities in the State could be persuaded to organize such a course on regular classroom basis or through correspondence or a combination of the two techniques.

As has already been stated, a short course of in-service training of teachers of classes XI and XII will also be necessary so that the teachers are able to do justice to the enriched syllabus. While planning these courses special care would have to be taken of the fact that some of the subjects at this stage will be taught at advanced level and that a part of the syllabus will, in any case, be of the standard as is now taught in the first year of the 3-year degree course. The focus of the in-service training in this case particularly should be on the latest and relevant knowledge of the concerned subject to be made available to the teachers.

Teachers for Vocational Stream

As has already been indicated in an earlier chapter, the area of recruitment of teachers in this case has to be much wider and complex. And this gives a new dimension to the work of recruitment and training of teachers of the vocational courses. In the early stages of the scheme, the vocational teachers may either be recruited from those who are already working in the respective establishments or their services obtained on loan for short periods with provision for permanent absorption, if possible. Specialists may also be invited to deliver some lectures on specific topics of the syllabus on payment of suitable honoraria. In the case of such vocational courses which are allied to the academic courses, the services of qualified post-graduate teachers already in employment can be well utilised. For example, for parts of the syllabus of the subject of Secretarial Practices, the post-graduate teacher in Commerce can be utilised.

In view of the heterogeneity of channels from which the vocational teachers will be drawn, their in-service training gains added significance. Such a training has to be organised with considerable imagination and care in order to suit the exact requirements of teachers of the various types of vocational subjects included in the syllabus. Training of vocational teachers is perhaps more difficult than the training of teachers for academic courses. In any case, this is a new field. For training some of the teachers, it might be possible to take advantage of the teacher training institutes which have been set up recently for training teachers for the polytechnics.

Since the practical training of students of the vocational courses might, by and large, be in the office, hotel, factory etc. concerned with the particular vocation, the owners of the factories, hotels etc., might be persuaded to draw up suitable programmes for orientation of their own personnel who will handle the vocational students and will train them. The same set-up might be examined for being utilised to orientate teachers of the corresponding vocational subjects in the schools. It is suggested that there should be facilities for production of teaching aids and the vocational teachers should also be trained in using such aids. I would further like to suggest that re-training of the vocational as well as academic teachers should entirely be done at the expense of the government and the teachers should be treated on duty for the training period.

Strength of Teachers

The enlarged curriculum and other elements of the new educational pattern necessitate a review of the existing formulae to determine the number of teachers required for a school. The inclusion of work experience in school classes necessitates an increase in the work-load of existing teachers and the appointment of additional teachers in some cases. The compulsory teaching of sciences to all pupils of classes IX and X may also call for some strengthening of science teachers. Continuous internal assessment is being introduced in all classes. The time spent on this activity will have to be taken into consideration in determining the work-load of a teacher and in deciding the total strength of the teaching personnel of the school. Similarly, the teaching manpower used on remedial teaching, which in our conditions today has become most essential to help the weaker sections of the community has also to be taken account of. In the case of vocational subjects, where more personal attention of the teacher is called for, the pupil-teacher ratio may have to be kept low at about 12 : 1. For theory classes in the same subjects, the corresponding ratio could, however, be around 30:1 as in the case of other subjects.

Parity in Salary Scales and Fees

On the basis of actual experience, I would like to say in the interest of satisfactory implementation of the new pattern that where in a State the 2-year stage of classes XI and XII is located both in schools and colleges as well as independent units, there should be no difference in the salary scales and allowances of the teachers. If parity in these matters is maintained, it will solve several crucial difficulties in the introduction of the new pattern of education. The experience of Karnataka government in this connection is noteworthy, as the government has found it useful to have uniformity in these matters in respect of the 2-year stage, although it is for the present located in schools and degree colleges as well as in independent units called junior colleges.

It might be mentioned that it will also be advisable to have the same fee pattern in all such institutions (by whatever name they may be called) where the 2-year higher secondary stage is provided for. When the syllabus and educational programmes are the same, there is little justification for introducing different patterns of salary scales and allowances for the teachers or the schedule of fees to be charged from the pupils.

Protection of Existing Teachers

In the introduction of the new pattern in a State or Territory some of the higher secondary schools there may not be considered suitable for being upgraded to the XII standard. They will then have to be converted into secondary schools having a 10-year course only. This may create some administrative difficulties, specially in individual aided schools. To meet these difficulties, the following measures are suggested:

(a) An assurance should be given that no qualified and regularly recruited teacher will be thrown out of employment simply because of the new structure of education:

(b) The surplus teachers, if any, should be absorbed in the same institution or other institutions under the same management by utilising their services in connection with the normal expansion programmes, through the introduction of new subjects, or by deploying them in various reorganisation schemes undertaken by the States.

(c) Wherever necessary, special protection of service conditions and scales of pay should be granted even though the teacher may have to handle, as a temporary or long-term measure, some lower classes.

(d) In the case of post-graduate teachers and heads of schools, supernumerary posts, if necessary, should be created on a temporary basis for those who may be rendered surplus until such time as they are absorbed elsewhere or retire from service.

10

CHANGING FRONTIERS OF PEDAGOGY

In the previous chapter we examined the qualifications and training of teachers in the context of the new pattern of education. There is also a larger question to consider: The frontiers of pedagogy which are changing now at an accelerated speed.

Revolution in Pedagogy

In Indian education, Gurukulas constituted the most ancient form of educational institutions. The guru or the teacher was the only source of knowledge. Teaching was done through the word of mouth, and the syllabus covered language, religion, philosophy, etc. The Maktabs and Madrasas, which followed during the medieval period, had more or less the same status. The first revolution in pedagogy occurred with the invention of printing. Books and other printed literature then supplemented the work of the teacher; and gradually pedagogy tended to become book-based instead of teacher-based only.

One may say that the second revolution in pedagogy is taking place through the electronic media. These include the television, language-laboratory, video-tape and statellite. Such things not only supplement the teacher and the books but also constitute an alternative and potential means of teaching both children and adults. They tend to make pedagogy resource-based.

These developments continuously affect the teacher and his work in a big way. In an age of electronic media, for example, most teachers may not do teaching as it is commonly understood now. Instead, they may prepare lesson units for the teaching machines or write educational programmes for the television or function as moderators of telecast lessons.

The teacher is certainly not replaceable. But he is likely to become a subject of review, particularly in the present time which is notable for innovations and when the developing countries are being seriously advised to break away from the educational traditions of the so-called developed countries and evolve an educational system specially suited to their own needs and within their own means. The teachers constitute the largest single sector of employees in any country. In the case of schools in India, about 80 per cent of the total expenditure is on the salary of the teachers only. Under the pressure for expansion of education and the limitation of financial resources (Inadequacy of finance for education has always been there and in every country!) how far the traditional pattern of teacher employment can continue is a matter of concern to all educators, educational planners and policy makers. It would be of concern to teachers and teacher-educators as well.

Pedagogy under Stress and Strain

Pedagogy—the art of teaching—is a discipline in its own right. By definition, however, it is professional in character. As such, it takes advantage of the growth in several associated disciplines like Linguistics, Psychology, Sociology, Economics, Science and Technology, and adjusts itself to developments in various fields such as educational and political philosophies, mode of administration, and general well-being of the people. Pedagogy in India and elsewhere is at present under stress and strain. It is acquiring new meanings. Its frontiers are changing fast in several directions. We should remap, as it were, the new frontiers of pedagogy, the scope and pattern of teacher-education, and the role of the teacher, the teacher-educator and the teacher-administrator.

The 10+2+3 Educational Structure

To define the new frontiers of pedagogy it is necessary first to know the changing structure of education for which the teachers are to be prepared and the set up in which they are to work. For several considerations, including the need to strengthen national integration, a uniform educational structure of 10+2+3 has been agreed upon for the whole country and is being introduced as such. This raises many matters of interest to pedagogy. One of these, which crucially affects teacher preparation, relates to the qualifications of teachers.

For primary schools, the existing qualifications may call for modification in two directions: Science being a compulsory subject of study from class I itself, all primary school teachers may need to have good knowledge of Science; and depending upon the availability of financial resources, a graduate degree with professional training may gradually become the prescribed minimum qualification for primary school teachers. This qualification, to begin with, may in any case be lowered to a higher secondary pass together with professional training. At the higher secondary stage, which is half-way between high school and university, relatively more emphasis may be laid on the teacher's knowledge of the subject as compared to his qualifications in pedagogy; and a short orientation course instead of a full B.Ed. degree may be considered sufficient.

Knowledge and Skills

Traditionally, education has been directed towards giving to the student facts of knowledge and training his mind. Now skills, which mean training the hand and fingers, should also be treated as part of education. Learning in children is defined particularly to encompass relatively permanent behavioural changes which result from experience. This should, to my mind, cover both knowledge and skills. Even in the traditional teaching of 3 R's, skills of reading, writing and arithmatic were included. We have now to include the physical skills as well.

We have recognised 'education' and 'training' as two different activities, and sometimes debated and discussed the difference between them. We have emphasised that training, which is always intended to give a specific skill, is not education, although we have not been able to define education completely and finally. I believe that in order to help reduce unemployment, our educational system should also stress the acquisition of productive skills. Mere acquisition of knowledge does not lead anybody or any society along the path of economic progress. Knowledge is unquestionably necessary for the progress of civilization and culture, but skills are imperative for economic development. Skills are specially important for a developing country like ours. We have, therefore, to lay at least as much stress on acquisition of skills for production and management as on knowledge.*

Vocationalisation of Secondary Education

In order to link education with national development, SUPW has been introduced up to class X and specific job-oriented courses during the higher secondary stage of the proposed 10+2+3 educational structure. These will certainly enrich education, but they will also add several new dimensions to the work of our schools and their teachers.

Although the new higher secondary stage will be of two years (classes XI and XII), the duration of the various vocational courses may have to vary. This duration may be of one to three years, depending upon the time to be taken to cover the prescribed curriculum and prepare the individual well for the job. In this case, the curriculum will have to be prepared after taking into consideration the exact requirements of knowledge and training for the particular job and not on the basis of some imaginary or *a priori* considerations. Further, successful organisation of vocational courses will call for the involvement of potential employers from the very beginning in the selection of the courses, construction of the curricula, teaching and practical work.

As for the teachers, a new category will have to grow. Some of them may be found through orientation of selected teachers, e.g. of Agriculture, Commerce, Geography, Physics, etc. Some may be recruited on part-time or full-time basis from amongst the qualified and suitable persons already working in the relevant establishments or organizations. And some may be freshly trained through special programmes of pre-service training in selected institutions of teacher education. This programme of teacher preparation cannot be the same throughout any State unlike the existing programme for B.Ed., B.T. or L.T., because it has to cater to specific needs of various vocational courses which may themselves vary from region to region or even from school to school within the same region in the State. The nature, location and number of each vocational course has obviously to depend upon the availability of work opportunities in the locality.

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* p. 15 of *Changing Facets of Indian Education* by the same author, 1973, M/s Allied Publishers (P.) Ltd., 13/14, Asaf Ali Road, New Delhi-110001.

Education and Employment

Vocationalisation is a part of the educational process itself. In India, we have been taking note of it for a long time but we have not acted on it seriously. The educational system has continued to turn out school and college graduates all of whom cannot find work. Their acquired capabilities have either not borne any relationship with the available work opportunities or their capability has been unequal to the standard expected of them. The gap between the educational and the economic growth has resulted in unemployment, and this is becoming a serious problem.

What role can pedagogy play in this important aspect of national life deserves consideration. It has also to be stated that whether the educational system of a country can be held responsible for the employment of all the educated persons is a controversial matter, for the reply could be both negative and positive. My personal view is that the educational system of no country can be wholly responsible for employment of all persons it turns out as educated, but it cannot at the same time completely absolve itself of the responsibility for employment. The proposed vocationalisation is also not going to solve all problems of unemployment, but it should certainly turn out school leavers who constitute a more employable material.

The Problem of Change

The technological development, the emancipation of women, the growth of nationalism, the emerging States, the power blocks, the interdependence of people and the explosion of population are among the factors which have quickened history in the world. Other influencing elements are the threat of nuclear warfare, disparity between have and have-not nations, struggle between socialist and other societies, and the necessity of international cooperation. The various mass media have their own impact in accelerating change. There are other factors too like expansion in education and employment and movement of population.

The change creates an almost perennial problem of obsolescence. A well-educated youth of today might become an obsolete man of tomorrow. It has been expressed that a degree obtained twenty years ago may have very limited validity today because in twenty years the foundations of that degree might have been rendered meagre by the advance of knowledge. Those graduating today will still be in employment in the year 2000 A.D. But long before then their degrees and diplomas may become obsolete unless there is sustained and massive re-education at least in sciences, technologies and social sciences.

Technology has also added new dimensions to production and management. This compels the old hand to acquire new skills in order to adapt himself to new machines and new methods of work, and sometimes to new vocations too. Even everyday skills such as those involved in child care, cooking, travel and health maintenance are becoming more and more sophisticated. None of us can escape the use of some of the commonest gadgets and appliances in everyday life; and their use necessitates acquisition of some knowledge about their working and unkeep.*

Thus looking around us we see how the contemporary environment makes self-education on a life-long basis inescapable.

Special Responsibility of the Teacher

A teacher fully shares with other citizens the new stresses and strains arising out of the situation created by the problem of change. The demand is specially great on him because of his professional responsibilities.**

A teacher is always a student : a seeker of knowledge. Still there have been some teachers who rarely opened a book except the prescribed text-book and that too in the classroom only. Similarly, there have been some college and university lecturers who prepared their notes in the early part of their professional career and generally continued to depend upon them in their classes while teaching. It is not wrong to say about some of our academics that they chose to do away with learning once they took their degrees and lived on their intellectual capital ever after. This could happen in the past because what they had studied as students could, with some possible enrichment, later suffice for their teaching career. But this kind of easy attitude is impossible now with the manifold increase in knowledge in almost every discipline.

A teacher is a teacher, but he is a more effective demonstrator,

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*Pages 55 and 56 of the author's book *Life-Long Education*, published in 1971 by Orient Longman, 3/5, Asaf Ali Road, New Delhi-110001.

***Ibid.*

through his personal life, of values, attitudes, outlook, behaviour and performance. If he persistently acquires new knowledge, learns new skills and studies new methodologies, he exerts a very healthy influence on his pupils in the same and similar areas of activity. Studies have revealed that one of the very important reasons why most children do not read books these days in our country is that they do not observe their teachers and parents doing the same.*

In India, a person's educational career generally ends between 14 to 24 years of age. The average expectation of life in our country is about 55 years, but many people continue to work and live even longer. This means that the knowledge which an individual acquires during his student days must serve him for the remaining 50 to 60 years of his life, a position viable once upon a time but not so in the conditions of knowledge explosion of today. Even more disastrous will be the situation in which the knowledge based on an out-dated body of facts will be imparted by our teachers whose education is older than these facts by another 20-30 years, for this creates a gap of about 70 years in the knowledge needed and that possessed by the teachers.

Non-Formal Education

As already indicated in chapter 8, non-formal system of education is now considered very valuable because it offers more flexibility in providing instruction and training, more responsiveness in adjusting to changing needs or demands, and providing more equitably distributed opportunities for acquiring knowledge or skills. It is fast growing as a system parallel to formal education. We in India have also done some work in this field including teacher preparation. The need, however, is to integrate the two systems so that a person can take advantage of either or both as is found best for his needs and circumstances. It must be stated that the system of non-formal education is evolving its own methodology of teaching. This is considerably different from the traditional methodology. It, thus, gives a new dimension to the traditional approach to preparation of teachers for various levels and aspects of education.

Impact on Pedagogy

The situation referred to in some of the above paras creates

**Ibid.*

at least two impacts on pedagogy. We have to orient our methodology of teaching so that special emphasis is laid on self-study. That is, creating among the pupils (and the teachers) an aptitude and sustained desire for learning. Arousing curiosity should be the special aim of education. From the very beginning in the education of a child. imparting of self-educational skills has to be given as much importance, if not more, as the imparting of knowledge and skills. I would say that the value of any educational system should lie not only in how it has taught the young but also in how effectively it has taught them to use learning as a function during their mature years.

A child of 9 will be 22 by the end of the present century. It is difficult to anticipate to what level knowledge will have risen or what pattern life will have taken in that year. Nevertheless, it is a safe guess that in the 13 years till then knowledge and its application will have aged several times. Therefore, unless this child acquires the habit of learning continuously, he may never be able to make the adjustment he will be called upon to make 30, 40, or 50 years for which he may still live after 2000 A.D. And who can best develop this attitude in the child ? Obviously, the teacher and the pedagogy he operates.

The other impact relates to the nature of teacher-preparation work. This preparation cannot remain concentrated in pre-service training. It is unfortunate that nearly 90 per cent of the expenditure on teacher education in India today is incurred on about 10 per cent teachers who are fresh to the teaching profession. In the fast changing conditions of today in-service training is at least as much important. In the case of teachers in-service training has to cover both the 'content' and the 'methodology'. Pedagogy has therefore, to expand its field of operations to cover in-service training as well and to evolve appropriate philosophies, procedures, incentives, and methods to achieve the objective. In this important area, the associations of experts in pedagogy like the Indian Association of Teacher Educators may also play their due role of stimulation, organization, encouragement, and support.

Population Education

There is then the subject of population education with which our teachers should be fully familiar. Population education is considered to be a curricular innovation. It is a subject with varied ramifications, yet it has been considered best for being handled not as an independent subject but by being suitably incorporated in other subjects like languages, Social Studies, Geography, Life Sciences, etc. In this manner every teacher with the background of his or her specialization is to contribute to the overall understanding of the population problem and its implications in his or her own way. It may be added that population education is an innovation also because the learning process involved in it has to extend beyond the class room so as to cover the 93 per cent of the youth of age group 15-25 who are not in any educational institution.

It is further desirable that our teachers are exposed to a discussion of sex education including the technique of family planning. Besides practising family planning themselves they can play an important role in guiding and advising local adults, peers, neighbours and others in this matter. They should also develop the skill and ability to handle sex information without inhibition, helping thereby school children and adolescents to develop a positive and healthy attitude towards sex.

Political, Economic and other Developments

The Constitution of the Republic of India prescribes free and compulsory education for all children upto the age of 14 years. In a few States and Territories education is free upto high or higher secondary stage as well. It is also free everywhere and at all stages of education for children of the scheduled castes and tribes and other economically depressed persons. All these factors, together with the traditional value of education in our country and the special efforts of the government have contributed to expand education manifold since the independence of the country.

Developments have similarly taken place in the economic, social and other fields. These phenomena have raised a number of issues faced by our teachers, particularly at the school stage. All these have to be taken into consideration in any effort to study the changing frontiers of pedagogy. Some of these may be referred to only briefly for want of space and otherwise.

Multiple Teaching

As a result of the educational expansion, schools have increased in number so much that primary schooling facilities are now available within walking distance of every child in the country. But on an all-India basis about 40 per cent of the primary schools are still single-teacher schools and they may continue to be so for a long time. They necessitate multiple teaching on the part of the teachers. Effective teachniques of multiple teaching have, therefore, to be well provided for in our centres of teacher preparation.

Heterogeneous Population of Students

Because of democratisation of education the student population in our school classes has become not only larger but also more heterogeneous than in the past. This heterogeneity in terms of the level of general knowledge of the children has also increased, thanks to the various sources of information and enlightenment outside the school considerably availed of by children of the urban and other families. Through the suggested provision of multiple entry the span of heterogeneity in terms of ages and levels of knowledge of the pupils will increase further. The situation gives rise to a different psychology and behaviour on the part of many children. It also creates other problems to be faced by the teachers and to be borne in mind by the planners and administrators of teacher education.

Backward Children

Many pupils in our classes belong to the first generation educated families. They are, therefore, handicapped in their studies. They neither have a congenial atmosphere at their homes nor do they receive encouragement from their parents. How best to help the growth of the children who are weak in studies needs to be duly attended to. Such children cannot obviously be ignored on any consideration whatever—social, psychological, educational, etc.

Talented Children

The talented children must be given special attention in any case, for the leaders of society may generally grow out of them. I have, however, not favoured the establishment of special and exclusive institutions for them. I presume this is being accepted by our planners and decision-makers as being the most sensible approach at the present level of development of Indian education.

In that case, how best to reconcile the needs of the talented and the mediocre pupils in the same class needs very careful consideration.

School Drop-outs

It is common knowledge that nearly 60 per cent of the children enrolled in class I in our country drop out before completing four years of schooling which is considered essential for permanent literacy. There are well-known reasons and solutions for this problem. Pedagogy is apparently involved in both aspects of the problems. What should and can pedagogy do in this important area is a matter for serious consideration.

Out-of-School Youth

Pedagogy has also a role to play with respect to the out-of-school youth. Involvement of the teachers in this field is possible by throwing open the facilities of educational institutions to the local community and through a constructive participation of the teachers in the work of centres like Nehru Yuvak Kendras, community centres, public libraries, theatrical or musical groups, social service, shramdan activities, etc.

Institutional Planning

One of the several impacts of science on education is the institution of planning. It is regrettable that our teachers are not involved in educational planning as much as they should be. Perhaps they are also responsible for this situation. But institutional planning is exclusively their own field. They have to be forward-looking and to match as best as possible the needs to their institution with the resources available to it in order to maximise the result.

Economics and Education

In the material world of today the impact of the science of economics on education as an activity cannot be ignored. Students of economics may like to link education with manpower requirement. The students of education may, however, argue that the value of knowledge for the sake of knowledge cannot be overlooked completely and education contributes to the growth of human resource which includes manpower in the economic sense of the term. An attempt is also being made by the world of economics to evaluate education through the technique of cost-benefit analysis developed mostly in the field of industry and commerce. But it has to be mentioned that certain outputs in education are not measurable in quantitative terms and are, therefore, difficult to be analysed methematically. But the approach is attractive and important all the same.

It would appear that our teachers and teacher-educators cannot afford to remain completely ignorant of some of the concepts and principles of economics and their application to education. In fact, it is the teachers who should undertake necessary investigations and find solutions to some of the critical problems in education pointed out by the economists and others. Such problems should obviously include matters like : (i) how to improve the utilisation factor of educational buildings, (ii) how to minimise the wastage. at present, taking place through drop-outs and stagnation, and (iii) what methodology to adopt in order to maximise the pupil-teacher ratio without any significant loss of quality and standard of education.

Curriculum, Evaluation, etc.

It is because of the dynamic social changes, explosion of knowledge and methodology, general impact of science and technology, and similar other factors that our teachers will have to share increasing responsibility in several areas other than that of teaching. Such areas include : (i) curriculum construction, (ii) preparation and review of text-books, (iii) selection of literature for the library, (iv) comprehensive internal assessment of pupils, and (v) making simple scientific apparatus and teaching aids with the help of local and inexpensive material. Institutions of teacher education have apparently to provide for all such elements in their curriculum.

These are also the areas which create a kind of internal pressure on pedagogy. They do not demand huge investments in financial terms. But they can create a tremendous impact on the quality and standard of both education and pedagogy.

Modern Management

In their capacity as heads of educational institutions and otherwise, our teachers have also to do management work.

Management is fast becoming a science and a discipline. A good deal of wisdom and experience in this science has accumulated through its application to industry, commerce, defence, etc. It should be possible to adapt with success some of the new techniques for application to educational management. It must be mentioned that administration of education has now become more difficult and challenging because of several factors : size and more complex character of the organisation, politicalisation of some of the teachers and even grown-up pupils, and need to provide for participative management (participation of teachers, parents, pupils, and the community). Pedagogy has to encompass effectively the field of modern management as well.

School-less Society

I cannot conclude this brief statement on the changing frontiers of pedagogy without a reference to the idea of school-less society. We are accustomed to hear and support that for the stability of the society the school should inculcate in the young the core culture which constitutes the cohesive social force. Lately a view has been expressed that since growth and change must be supported and since the traditional school only helps the establishment (i.e. passes on to the next generation the attitudes, values, and patterns of behaviour of the current society) and thus strengthens the maintenance of *status quo*, it must in the interest of development be abolished and a different type of educational programme conceived and planned. Details of the alternative programme are not clearly known : they have yet to evolve. But the traditional 'trained' teachers who only possess the past-based knowledge may not fit well in the new programme.

As I said, this is just an idea. If and when it is elaborated, tried with success, and accepted, it may well become the third revolution in education and pedagogy. In that case, it may surpass the impact of both the revolutions of the past.

11

OTHER IMPLICATIONS OF THE NEW PATTERN

Location of the new Classes XI and XII

In the 1968 national policy statement on education it was stated that the 2-year stage (classes XI and XII) could form part of the schools or colleges or both. Out of the various States, which completed introduction of the new structure, Karnataka decided to have these classes in independent institutions called Junior Colleges, although as a transitional measure these classes were being run in selected higher secondary schools and composite colleges as well. In Kerala, these classes form part of the colleges only. In Andhra Pradesh, the 2-year course has been available in both schools and colleges as an interim measure and policy decision is to have them ultimately in separate institutions only. Assam is reported to have decided to put this stage with schools only. The same is true of Gujarat. In Jammu and Kashmir it is in the schools or in separate units with classes XI and XII only. In Maharashtra also it is with schools and colleges both. Tamil Nadu is following the same policy except that the colleges have been permitted to retain that stage for five years only. In Tripura and West Bengal the +2 stage is with schools only. In Uttar Pradesh, this stage has always been a part of the school system under a common board for both high school and intermediate education and examination. The same practice is operative more or less in all the Union Territories. The Kendriya Vidyalayas too are 12-year schools ending with class XII

The reasons which favour the treatment of the new classes XI and XII to form a part of the school are given below:

(1) Following the recommendations of Indian Secondary

Education Commission of 1953, the Government of India had accepted and supported 11-year higher secondary pattern. One of the most serious difficulties in this pattern was that the students were compelled to choose a particular stream in class IX at too early an age of about 13 or 14 years and the vocational bias given to the practical stream of the multipurpose schools was wrongly conceived. A solution to such a difficulty has been found by upgrading the school stage to 12 years with the condition that there should generally be no electives upto class X and specific job-oriented courses should be introduced in the vocational stream in classes XI and XII.

(2) Locating classes XI and XII in schools would strengthen the Indian system of school education, the need for which has been recommended by practically all relevant committees and commissions in the country. In this arrangement the post-graduate teachers who will teach classes XI and XII can be used with advantage for teaching some of the lower classes as well. Even their presence would have a salutary effect on the general tone and standard of the school as a whole. The facilities of laboratories and libraries, which will be better equipped in the case of classes XI and XII, could also be made use of by the students and teachers of lower classes.

(3) The pupils at the age of 15 and 16 (after passing class X examination) will be too young and immature to take proper advantage of the lecture method and large classes of the undergraduate stage with universities.

(4) Growth of the above pupils, if placed in the colleges and universities, is likely to be inhibited also because of the dominance of more grown-up and psychologically a different type of students following the graduate and post-graduate courses there.

(5) After elementary education upto class VIII, it would be appropriate to have an integrated unit of classes IX to XII. This arrangement will provide adequate elasticity to the students to give up their studies at the end of class X to take up academic or vocational education in classes XI and XII.

(6) The cost per pupil in the new classes XI and XII will be much less if they are a part of the school system. The colleges and universities will cost much more for the same work.

(7) The participation of students of classes XI and XII in the college programmes is likely to further lower down the general

standard of higher education in India.

(8) It is better for the university authorities to expand their resources and energy on raising the standard of higher education rather than frittering the same away on the school stage.

(9) Politically and otherwise it might be more difficult to persuade the existing 11-year higher secondary schools to part with class XI and become 10-year high schools. On the contary, they would like to add class XII instead of being downgraded. The difficultry of the resistance to give up class XI will be solved to a considerable extent if the new classes XI and XII are attached to schools.

(10) The universities, academically oriented as they are, may not be sufficiently interested in the job-oriented and terminal courses to be introduced in the new classes XI and XII even if they can acquire competence to handle these classes. If the job-preparedness of the students is weak, the scheme will fail like the earlier scheme of multipurpose schools.

(11) With the present trend towards nationalisation and establishment of public sector undertakings, help and co-operation of the employers and others in the successful growth of the vocational stream will be easier through the government than through the universities, which are completely autonomous in character.

(12) The University Grants Commission decided not to take into consideration the requirements of PUC or other equivalent classes of the university system while determining its grant to the university. This practice has actually been in operation.

The following arguments are often given in favour of attaching the new classes XI and XII to colleges:

(1) Most of the high schools are already over-crowded and attaching two more years to these classes will make them even more unwieldy.

(2) As the content of the 2-year course is expected to be high in standard, the colleges will be in a better position to handle it than the schools. The universities generally appoint or approve first divisioners and high second divisioners to teach the college classes including the pre-university stage. It is not so with the schools. Also, the scales of pay as prescribed by the U.G.C. for college teachers are higher than those prescribed by the State governments for post-graduate teachers in schools and, therefore, better talent among teachers goes to colleges than to schools.

(3) The science laboratories and libraries are better equipped in the colleges than in the schools.

(4) Wherever PUC is now with colleges, attachment of the two-year course to high schools may involve administrative problems such as transferring of post-graduate teachers from the PUC classes to the schools.

(5) The colleges may face financial difficulty if their PUC classes are withdrawn from there, because enrolment in the PUC classes is generally quite large as compared to other classes of the college. Naturally, the colleges will claim compensation for loss of income from the pre-university classes or they will raise their fee for the degree classes.

It might also be argued that it is not desirable to attach the new classes XI and XII either to high schools or to degree colleges as these classes will not receive the special attention which they deserve. According to this view, there should be independent institutions having classes XI and XII so that the new higher secondary pattern functions effectively. The establishment of independent institutions with only classes XI and XII will need funds for the construction of buildings and providing furniture, etc. To economise expenditure in this regard, it is possible that classes XI and XII may be integrated and separate higher secondary schools or junior colleges incorporating a few lower classes may be set up for them.

After considering all aspects of the matter in some depth I have come to the conclusion that it would be best to adopt the following approach :

(1) On academic and pedagogic considerations alone, the new classes XI and XII should form part of the school system and should be located in selected schools, preferably the higher secondary schools.

(2) Independent units having only classes XI and XII can be started if the enrolment in each unit is large enough to make the institution economically viable. In case the independent unit with classes XI and XII only cannot become an economically viable institution, then the unit can comprise classes IX to XII or VI to XII. It is estimated that an independent unit with an enrolment of about 500 pupils can be viable.

(3) Degree colleges which cannot maintain themselves, after the PUC classes are taken away from them, may wish to reorganise

themselves, give up the degree classes and concentrate on the new classes XI and XII.

(4) Irrespective of where the new classes XI and XII are located, the academic control of these classes should vest in the suggested Board of Higher Secondary and Vocational Education.

Selection of Schools for Upgrading Them

Introduction of the 10+2 pattern for school education does not mean that all existing high schools or 11-year higher secondary schools should be upgraded and made 12-year schools. The Education Commission (1966) had visualised that if one-fourth of the total of secondary schools providing ten-year course were raised to higher secondary status with classes XI and XII, they would meet the needs. In actual practice, this proportion may vary a little from State to State depending upon local conditions, but the anticipated estimate of the Education Commission with respect to proportion of the higher secondary schools may not be exceeded generally, provided the schools having the new classes XI and XII are planned properly and located objectively.

The schools where the new classes XI and XII are to be located will have to be selected very carefully. Great significance should be attached to this aspect of introduction of the new pattern of education, for it has far-reaching implications for the success of the whole scheme. To facilitate the work in this connection, I would like to suggest the following guidelines :

(1) There should be a balanced distribution of the new higher secondary schools on a regional basis all over the State or Territory.

(2) Each of the schools where the 12-year course is proposed to be started should be so located that it can draw from the neighbourhood at least 100 students for the new class XI.

(3) Preference should be given to those schools where post-graduate teachers are already in position.

(4) In the case of rural and semi-urban areas, preference should be given to those schools which have hostel facilities.

(5) If the school is privately managed, it should be ensured that its financial condition is sound.

(6) It should be an adequately developed school from the point of view of accommodation, library, laboratories, workshops, play-grounds, etc.

(7) Before finalising the selection, the school should be inspected and reported upon by a suitably constituted committee of at least two educationists and educational administrators.

Preparatory Measures

As stated earlier, the new structure has already been introduced in many States and Territories of the country. But from what is known about the progress, a great deal of work still remains to be done in each of them to stabilise the pattern of education, to modernise and upgrade the syllabi, and to introduce effective vocationalisation at the higher secondary stage. The States of Assam, Gujarat, Maharashtra and West Bengal took advance action by way of introducing a revised curriculum in the *lower* school classes. I have been urging that the States and Territories planning to introduce the new pattern will be well-advised to initiate preparatory measures by way of advance action so as to facilitate the introduction. These measures should include the following :

(1) To determine the considerations on which selection of the schools, where the new classes XI and XII will be introduced, is to be made. When this has been done, to make the actual selection of the institutions. A selection based on political consideration alone will be wasteful and unfortunate.

(2) To take up the question of providing the personnel, i.e. principals, teachers and other staff required for the schools which will have the new classes XI and XII. In this connection, the shortages or excesses of the personnel should be assessed. Where there is a shortage, timely steps should be taken to train or find and select the persons. In the case of excess, if any, schemes for suitable deployment of the surplus personnel should be decided upon.

(3) To re-construct and upgrade the syllabi both at school and college stages. The universities should also be involved in this revision and upgrading of courses.

(4) To ensure availability of books on the new syllabi well in time. It should be noted that this is a slow and time-consuming process.

(5) To amend relevant acts, statutes, rules, etc., in respect of universities, boards of secondary education, and grant-in-aid systems, wherever necessary and as the case may be, and to under-

take new legislation, if any, for establishment of new boards or bodies in connection with the introduction of the new pattern.

(6) Where additional accommodation is required or new institutions have to be opened, necessary advance measures should be taken to ensure that the construction of additional rooms/buildings is completed within the available time.

I should also like to mention that the order of all the advance measures cannot necessarily be the same for every State or Territory and that in most cases several advance measures may have to be taken simultaneously.

Age Requirement

Formal education of a child starts in class I. The existing situation in India regarding age of entry to class I varies from State to State. In some it is 6 plus, and in others 5 plus. The Central Advisory Board of Education at its 22nd meeting had recommended 17 plus as the minimum age for entry into a univerity. It had also at that time recommended an 11-year course of secondary education from 6 plus to 17 plus. The Education Commision (1966) has recommended admission to class I at the age of 6 plus (page 150 of the report). The various documents on education published by the Union Ministry of Education and Social Welfare or the Planning Commission also refer to enrolment of children of the age of 6 years in class I. In its 56th meeting held in September 1972, the Central Advisory Board of Education has further recommended that there should be pre-primary or preparatory classes before formal education begins in class I.

According to expert technical opinion of Dr. Lalit P. Agarwal, Chief Organiser and Professor of Ophthalmology, Dr. Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, if the visual stress leading to breakdown of the binocular functions and their coordination with hands and brain is to be avoided, the child should not be put in the school for formal education before 6 years of age. Further, homogeneity of age-group in the same class is highly desirable for improving the atmosphere in the class and the standard of education generally. This practice is being followed in all educationally advanced countries and even in our country in some selected schools maintaining good academic standards. I would, therefore, like to suggest that 6 plus be prescribed as the minimum age for admission to class I on uniform basis all over the country. In any case, in order to meet the challenges of the syllabi which will be strengthened under the new pattern and keeping in view the fact that the new classes XI and XII will require more maturity on the part of the students, I would like to urge that the students are not allowed to take the class X examination before 16 plus and the class XII examination before 18 plus.

Production of Instructional Material

The new syllabi, particularly in classes IX-X, XI-XII and the degree course in general education will call for new text-books, other reading material and teaching aids. The preparation of this material often suggests amendments in the syllabus. Because of this and other factors, the reconstruction of the syllabus is now viewed as a continuous activity. In other words, the syllabus is required to be kept under constant review. In Indian conditions, however, the prescribed text-books should not be changed too frequently in order to reduce educational expenditure of the students. According to modern considerations in this field again, the prescribed text-books should be accompanied by a hand-book for teachers. Also, text-books should be supplemented with suitable reading material for the students and appropriate literature for reference by the teachers. I would specially like to emphasise this aspect of production of instructional material, more so in the case of the vocational stream where most of the courses will be instituted for the first time and where many of the teachers may be drawn from non-educational establishments.

Schemes of Scholarships

A number of schemes of scholarships are at present in operation, both at national and State levels. In addition, there are some special scholarships earmarked for certain fields of education or training, e.g., the scholarships for technical or the hadicapped persons. The national scholarships include those of U.G.C. and others like the science talent search scholarships of N.C.E.R.T. Most State scholarships and several national scholarships are meant for students at school and pre-university or intermediate education levels. The introduction of the new educational pattern will call for a review of the terms of several of the latter schemes of scholarships. It will, in particular, be necessary to re-determine the educational stages at which some of the scholarships should commence and the duration and other terms to be laid down for them.

I will also like to suggest the institution of some State or national level scholarships for students of the vocational stream specifically. This will attract and encourage talented pupils, who are not very fit for academic or university courses in general education, to join the vocational stream and help in building it up. Continuance of such a scheme of scholarships may be reviewed when the availability of early and worthwhile jobs itself makes the vocational stream sufficiently popular among students.

Conditions for Success

It is well-known that for the success of any new programme of educational reform it is essential that:

(1) All aspects of the programme are properly planned.

(2) Training of the required manpower is undertaken in advance and in time.

(3) Essential inputs like finance, material resources in the form of buildings, furniture, teaching aids and equipment, curriculum and reading material are all made available.

(4) Administrative machinery is properly geared to the spirit and needs of the re-organisation.

(5) While progress of the scheme is reviewed periodically to incorporate appropriate modifications in it, a restraint is applied not to dig it from the roots each two or three years. This is a very important consideration because an educational scheme, unlike some other types of schemes, takes several years before it can show tangible results.

All the above considerations automatically apply to the introduction of the new pattern. Some additional conditions, which are specially relevant to the new pattern, will include the following:

(1) The schools to be upgraded to 12-year higher secondary institutions should be selected objectively, preferably on the basis of the criteria given earlier in this chapter.

(2) An effective and successful programme of vocational education, more specially at the higher secondary stage, is operated. As a first step towards this, a unit should be immediately set up in the Directorate of Education and qualified personnel appointed

to it.

(3) It should be possible for the students to branch off at the end of class X and at the end of class XII so as to enable them to take the gainful work either as employees or in the area of self-employment. To achieve this objective, a policy of delinking university degrees with recruitment for bulk of the jobs should be enforced.

(4) The prescribed qualifications for recruitment to government and other services should be revised so as to be consistent with the job-requirements. Wherever possible, the minimum age of recruitment should also be lowered to correspond to the end of the new higher secondary stage of education.

(5) In order to encourage proper growth of the vocational stream, suitable wages should be given to those who complete a vocational course. In any case, this wage should not be less than that which may be available to a person who has undergone a comparable academic course.

(6) The number of admissions to full-time courses should be restricted and the rest be encouraged to join own-time courses (where the capacity is unlimited and where large numbers are welcome to reduce cost), with the proviso that : (a) seats are reserved for the underprivileged, (b) a large scheme of scholarships and fee-concessions is made available to the poor and talented pupils, and (c) government assumes greater financial and supervisory responsibility for education.

(7) The private sector may be advised and helped to make available its financial and managerial contribution to institute fellowships, research assistantships, scholarships, etc., to finance specific research projects in education, science, technology, etc., and to organise appropriate training and refresher programmes basically for its own employees but open to others as well.

(8) In order that products of the new system of education are successful in their lives it is necessary to arrange for a systematic machinery by which all employees irrespective of their status and position continue to update their knowledge by undergoing orientation or refresher courses at regular intervals. The responsibility for this work should be shared by all ministries, departments, undertakings and other organisations of the Central and State governments and all other employers by establishing suitable programmes of life-long education for the benefit of their employees.

The conditions in sub-paras (3 and 4) above will entail relatively larger amount of work to be done in future by authorities selecting personnel for public and other services. A good part of this extra work could, however, be reduced if the requirements of each job are analysed scientifically in advance so that prescribed qualifications can be specifically related to job requirements. In any case, the nation will stand to gain in the long run if we can effectively operate a more valid and meaningful educational pattern; and the conditions stated above are a prerequisite for the success of such an operation.

Financial Implications

There are a number of considerations of a general nature which are required to be borne in mind while working out the cost of introducing the new pattern of education in any area or in consolidating the same there. In the case of States and Territories previously providing a 14-year first degree course in general education, funds will be needed for one year's additional instruction. A major factor affecting this aspect of the cost is whether the +2 stage is located in schools, as independent units or in degree colleges. The last two arrangements will apparently be more expensive. Some principles in this regard have been enunciated and priorities suggested in an earlier part of the book. An indication has also been given of the possible criteria on which selection of the existing schools for upgrading to class XII should be made. To the extent these principles and suggestions are acted upon, the actual expenditure on the change-over will be less. In the case of Uttar Pradesh, this expenditure will be in the colleges and universities only. It should be mentioned that some expenditure will be needed even in the case of States and Territories where the first degree course in general education could be obtained before in a period of fifteen years only.

Science has so far been an elective or optional subject at the high school stage. The new pattern visualises compulsory teaching of science upto class X. Hence, simultaneously with introduction of the new pattern, provision for teaching of science will need to be made in all high schools of the country. This will necessitate strengthening or establishment of science laboratories in secondary schools. This may also require appointment of additional science teachers in some schools. Expenditure on these items should be a legitimate charge on the change-over to the new pattern. Funds should also be found for science equipment and consumable material. But insofar as the teachers are concerned, it is likely that in many cases there may be no need for additional appointment at least in the earliest phase of the change-over and proper deployment of the existing teachers may serve the purpose. This is exactly what happened in Delhi where the new pattern was introduced in May 1975, and where out of 572 schools 266 had no facility to teach science in classes IX and X. In this territory some grants were given for purchase of additional equipment during 1974-75, i.e. the year of introduction of the new pattern. The schools which had no provision for science teaching were advised to economise funds on construction of buildings and use an existing classroom as science laboratory. It was also visualised that no science teacher need be appointed immediately and that the science graduates who had been teaching science to classes VI-VIII might suffice for the purpose with suitable orientation to teach the new syllabus in science. More funds for science teaching were, of course, given to the needy schools in subsequent years.

Another significant item due to which additional expenditure is inescapable is vocationalisation of the higher secondary stage of education. This expenditure will largely depend upon the number of vocational courses introduced and the character of such courses. As a general policy, a liberal provision should be made in this case because the cost per student will be higher. The total amount actually needed in one year or in a plan period cannot, however, be high at this stage of development. It will increase as the programme gets intensified. The expenditure on the demand survey should also be a legitimate charge on the vocationalisation of education.

Expanditure on the expansion of secondary or higher secondary education or for that matter on any stage of education or on SUPW cannot be treated to be an expenditure on the new pattern. Even if this pattern had not been introduced, expenditure would have been incurred on providing education to the increasing number of students, particularly at the school stage. This expenditure should not be treated to be a part of the expenditure on the change-over to the 10+2+3 pattern. Similarly, a compulsory provision for SUPW in all classes of the school stage has been pressed in the new syllabus. Some such provision had been made in all Basic Schools and other elementary schools oriented to the Basic pattern since the fifties and sixties. There are also some other primary, middle and high schools where provision has been made for manual work and/or social service to be done compulsorily by every boy or girl enrolled in the institution. A recommendation to the effect that provision for work by hand or a craft or some other similar activity should be made in every Indian school has been before the country for nearly three decades now, because this is an item intended to improve the quality of school education. The same recommendation is being stressed again under the new pattern and has been made an integral part of it. As such, expenditure on this item should appropriately be met from out of the plan or non-plan funds which are provided for improvement of school education.

In this connection, it seems worthwhile to mention that we have learnt in India many lessons through the five-year plans in respect of the formulation and implementation of educational schemes. Two of these lessons are:

(i) That adequate funds are never available for education. Even in the most prosperous countries, the educators are generally not satisfied with the money they have for education.

(ii) That it is as difficult to procure funds for education as to spend them most effectively. Even otherwise, there are certain factors inherent in the very process of implementation which delay actual expenditure of the allocated funds and some amount of spill-over does take place in many cases not only in the educational sector but in other sectors too.

Because of these considerations the estimates of cost, particularly in a developing country like India, should be made as realistic as possible and the available funds spent in the most economical manner. Irrespective of what happens in other sectors of development, in education we have to take every rupee as far as it can go. Education is *inter alia* to build correct attitudes of the future generation; and an attitude of economy, but not certainly of miserliness, is today called for in every Indian and in every walk of life.

I do not know if many people are aware of the fact that the new pattern should also result in some saving in the current expenditure on higher education. This is likely to happen due to more than one factor. The annual rate of increase in enrolment at the higher secondary stage will be somewhat less under the new pattern. This is because of the introduction of a public examination at the end of class X where the pass percentage is considerably lower than the promotion percentage at the corresponding stage of the previous scheme of 11-year higher secondary education. This lower rate of increase will down the annual increase in enrolment at the college and university stages as well. The upward trend in enrolment in higher education will also decrease a little because some of the high school leavers will join terminal courses in the vocational stream. This phenomenon of a decrease in the upward rise in enrolment in higher education is understood to have taken place in every state after introduction of the new pattern there.

A lower enrolment at the under-graduate and post-graduate stages of education should not be matter of regret because some of those who were really not capable of making full use of higher education are being diverted to more useful channels. In fact, this is good for those persons, good for higher education, good for the Indian system of education and good for the Indian economy.

In conclusion. I would like to say that the financial implication of the new pattern of education is not the most difficult or deciding feature due to which the educational transformation visualised under it should be withheld or delayed. Let nobody, however, get away with the impression that the introduction of the new pattern is possible without any additional funds. The study of the details of its introduction in the whole country clearly indicates that the additional funds incurred will in due course be compensated by a saving in the current expenditure on education. Since the additional funds will be needed now and the savings will occur a little later, it is more a question of phasing of the educational budget over the years. Above all, a successful programme of introduction of the new pattern including vocationalisation of higher secondary education will contribute to improve the general standard of citizenship and economic prosperity of the individuals as also the material growth of the nation. These advantages should in the long run give an economic return many times more than some money spent on introducing the new pattern.

ANNEXURE I

CHALLENGE OF EDUCATION

A Policy Perspective

A SUMMARY*

1. This document is a summary of a document entitled 'Challenge of Education' circulated by the Ministry of Education for initiating a debate on certain facts, views and issues relevant to the formulation of a Policy for Education.

2. Education being a complex subject with wide ranging ramifications, definitive views on a new policy for it cannot be finalised without consulting the decision makers in the States and Central Government and the parliamentarians, educationists, intellectuals, teachers, parents, students, entrepreneurs etc. This document aims to provoke a discussion by stating various viewpoints in a forthright fashion. If people read it, comment on it and criticise it, it will have served the purpose for which it has been prepared.

3. While preparing this document, it has been borne in mind that India is standing on the threshold of the twenty-first century. Those being born now will finish their elementary school at the turn of the century. They will be face to face with unprecedented opportunities and challenges. To prepare for these and also to create a national environment for peaceful and harmonious development, it is necessary to reshape the education system since only education can imbue people with the knowledge, a sense of purpose and the confidence essential for building a dynamic, vibrant and cohesive nation capable of providing its people with the wherewithal for creating better, fuller and more purposeful life.

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*E.P.A., Journal of the National Institute of Educational Planning and Administration, New Delhi, Vol. 8, Nos. 1 and 2, 1985, pp. 1-16.

4. India's constitution envisages a just, equitable and fraternal society which would assure the dignity of the individual and the unity and integrity of the Nation. Policy planners in India are unanimous that while economic strength and vitality determines the scope and quality of political freedom, for millions the availing of the benefits of freedom depends on its being accompanied by an equitable distribution of goods and services. This is possible through expansion, dispersal and diversification of employment, which in turn implies equality of opportunity, particularly in access to knowledge and skills.

5. The Indian polity is characterised by a concern for the individual, not as a mere instrument of development but as an end in himself. This emphasises the importance of education for the development of self-confident individuals with a commitment to democratic values and national unity.

6. Education helps to bridge the chasm of disparities between people, socio-economic groups and regions and thereby reduces disintegrative tensions. It develops human resources which has a multiplier effect on utilisation of all other resources. Thus it is an investment in development.

7. Elementary education is the most crucial stage of education because the foundation of the personality, attitudes, self-confidence, habits learning skills and communication capabilities is laid at this stage. Universal elementary education strengthens the fabric of democracy. That is why it was set forth in Article 45 of the Constitution.

8. Vocational education is essential for providing manpower for economic growth. It provides the link between the production function, employment and educational processes.

9. Higher education provides ideas and men to give shape to the future and sustain other levels of education. It provides the historical and ideological perspective to society. In addition, it supplies a wide range of increasingly sophisticated manpower required in industry, agriculture, services and administration.

10. Education system cannot remove all the shortcoming of society. As a sub-system, of society, it tends to imbibe the characteristics of the total enviroment : it cannot maintain its excellence or its democratic character unless it is deliberately supported in these thrusts.

11. Education planning can have social relevance only if its

quantitative and qualitative objectives are spelt out by those responsible for national development.

Moreover, it acquires dynamism based on a national will to nurture the future generations for excellence, without unduly exposing it to the rough and tumble of the current populist pressures.

12. Educational goals are often postponed on the grounds of high cost of implementation. While deciding this, the social cost of a "no-change" option is seldom taken into account. At their best, the products of our schools, colleges and universities are comparable to the best scholars, technologists, doctors and managers in the world. Against this small minority, the preponderant majority has little to show by way of capacity for self-study; communication skills and a sense of social or national responsibility. Even the gifted do not always show evidence of the expected commitment to social responsibility.

13. The above situation is largely because of excessive emphasis on degrees and an examination system which tends to evaluate students at yearly intervals largely on the basis of rote learning, Examinations and grades have lost much of their credibility. Neither the public nor employers trust them. Students relate education exclusively to examinations and, in the process, education has tended to become dysfunctional, producing a large number of unemployable youngmen and women. The system of examinations could be one of the reasons why students and teachers find it difficult to resist progressive erosion of values. Unless this process is reversed by a reorientation of education, it will be difficult to contain exploitation, insecurity and violence. It is also necessary to counteract divisive forces arising from caste, religion and regional considerations which are straining the sense of national integration. Pride in national identity has to be rebuilt.

14. Education will have to be modernised to facilitate the modernisation of production, services and infrastructures. Besides, to enable young people to develop entrepreneurial ability, students will have to be exposed to challenges of new ideas and unfamiliar situations. To enable the teachers to do this, besides changing curricula and teaching methods, the attitudes and values of teachers will have to be changed through basic changes in teachers training.

15. India has made considerable progress since Independence

in terms of increase of all types of institutions, enrolment and the sophistication and diversification of educational programmes. It has, however, not been possible to meet the nation's aspirations from the view point of overall coverage, equitable distribution and quality of education. In terms of literacy, India is still amongst the most backward countries with literates accounting, in 1981, for only 36.2 per cent of the population, with women, Scheduled Castes and Scheduled Tribes still at the level of 24.9 per cent, 21.4 per cent and 16.4 per cent respectively.

16. We are still very far from fulfilment of the goal of universalisation of elementary education, which was envisaged in the Constitution itself to be achieved by the year 1960. One of the principal reasons for this is the high drop-out rate (Classes I-VIII) which continues to be above 75 per cent. This rate is much higher amongst girls, Scheduled Castes and Scheduled Tribes.

17. The number of children going to middle, high and secondary classes has increased from 22 lakhs in 1947 to 340 lakhs in 1983, and the country now has 175,000 schools for these levels as compared to 13,000 in 1947.

18. The number of girls and boys successfully completing the higher secondary stage has risen from 2.37 lakhs in 1960-61 to 8.40 lakhs in 1981-82. The most disquieting feature at this level of education is that, even after 8 or 10 or even 12 years of schooling, a substantial number of pupils do not acquire the capacity to understand their physical, cultural or socio-economic environment, or to think for themselves. They do not enter the employment market with sufficient confidence or competence or vocational skills. Nearly 83 per cent of students passing out of the higher secondary stream seek admission in colleges and universities. Only 20 per cent of these are able to find a berth in professional or technical institutions.

19. If the Education Policy adopted by Parliament in 1968 had been implemented, 50 per cent of the students at 10+ level of secondary education should have developed employment-oriented vocational skills. By the year 1982-83, student intake in vocational courses at +2 level had reached just 60,000 per annum.

20. At the time of Independence, there were only 700 colleges and 20 universities in India with an enrolment of 4 lakhs. Now the country has 5,246 colleges and 140 universities with an enrolment of 33.60 lakhs, of whom 9.76 lakhs are girls.

21. The Education Policy of 1968 sought to relate education more closely to life, expand educational opportunities, improve quality of education, emphasise development of science and technology and cultivate moral and social values. While some significant achievements have been recorded, by and large, these goals have remained unachieved. In the meantime, new learning needs have arisen due to the inexorable march of economic and social growth and progress in science and technology.

22. A new approach to education is necessary. In the new design, capacity to learn will be more important than what is learnt and continuing education will be emphasised. Social and moral values will receive much greater emphasis. Access, equity and quality of education will be ensured through rigorous planning. Before such a design can be prepared, it is necessary to evaluate the past experience, assess successes and failures and examine as to how far mechanisms for formulating policies, allocating resources, ensuring inter-sectoral coordination, enforcing standards and monitoring and evaluation need modification.

23. It is apparent that the most important reason for slow progress has been an acute paucity of resources. Growth in enrolment and rise in prices have outstripped the increases in budgetary allocations. Expenditure per student has, over the years, declined in real terms. More than 90 per cent of the expenditure is on teachers' salaries and administration. Practically nothing is available to replace black-board or buy chalks, or charts and teaching aids or even minimum school amenities.

24. People are generally apathetic to an education system which does not appear relevant to them and which has little accountability to them. The school system seems to have become a part of a gigantic bureaucratic set-up which does not provide sufficient scope for intervention at local levels and is also frustrating for teachers with initiative. Consequently, the education system has largely become the responsibility of government. Greater involvement of the community predicates delegation of authority to enable it to keep an eye on the performance of schools and specially of the teachers. The sheer size of the system creates an environment of anonymity for the teachers and individual schools, in which any kind of default or creativity fails to come to notice.

25. To enable girls and boys from poor families to receive

the benefit of education despite their inability to attend school during regular hours, new and non-formal approaches have to be adopted. These would, however, require much greater support in terms of instructional material and regular monitoring and appraisal.

26. In absolute terms, there were more illiterates in 1981 (437 million) than there were at the time of Independence (300 million). Nonetheless, as a per cent of population, literacy has progressed steadily from 16.67 per cent in 1951 to 36.23 per cent in 1981. There is, however, great disparity in the progress made, not only between men and women but also between regions. Female literacy in rural areas varies from 64.7 per cent in Kerala to 5.4 per cent in Rajasthan. In Bihar, Madhya Pradesh and U.P., which account for 38 per cent of the rural families in the country, female literacy percentages range between 8.99 and 10.17. This situation reflects the fact that the positive results from elementary and adult education are largely nullified by a high rate of growth of population.

27. There is a positive correlation between literacy and acceptance of family planning. Because of this, both elementary education and adult education should be assigned a high priority. In any case, if things continue as they are, in the year 2000 A.D., there would be 500 million illiterates in India.

28. There is also a definite link between adult literacy and children's participation in schools. UNESCO studies have revealed that adult literacy level of 70 per cent is critical threshold for universalisation of elementary education.

29. At the level of secondary education, today, only 22 per cent of the students of the corresponding age group are in the schools. Of the few who come to the schools, very few have access to schools with proper buildings, laboratories, libraries or playgrounds.

30. According to All India Educational Survey of 1978, many primary and middle schools do not have even basic amenities. In so far as primary schools are concerned, 9 per cent had no buildings whatsoever, 41.5 per cent had no blackboards, 72 per cent had no library facilities and about 53 per cent had no playgrounds. In the rural areas, 89 per cent primary, 70 per cent of middle and 27 per cent of secondary and 10 per cent of higher secondary schools had no urinal/lavatory facilities.

31. Vocationalisation in the higher secondary stage was a major plank of the education policy of 1968. 50 per cent of the students at +2 stage were to go into the vocational stream. The actual figure is too insignificant to deserve mention. This is largely because neither the physical facilities nor a detailed plan of action, complete with details of employment opportunities, nature of diversification required, appropriate course curricula and teachers trained for vocational training are available at present. In addition, social values which denigrate even skilled manual work also stand in the way of vocationalization.

32. College and university education has greatly expanded since independence. Taken as a whole, the general condition of colleges and universities is a matter of concern. Many of these are known for rampant casteism, regionalism and inbreeding. Some of these are virtual battlefields in which political and other factions, backed by teachers and aided by other staff, often fight pitched battles for power and supremacy. Some Vice-Chancellors spend their entire terms of office behind barricades.

33. There is a widespread feeling that the present state of higher education is largely because of overt and covert interference by external agencies. This underlines the importance of real autonomy. However, attention has also to be given to the equally important aspect of accountability. Often the Vice-Chancellors, who are considered responsible for running universities, function in conditions of fast dwindling prestige of their office. They have to be at the doorsteps of government officials for funds required for running the university and they have to compromise to get the co-operation of university bodies.

34. The UGC has made an enormous contribution to establishment of academic norms and promotion of innovative programmes. It is, however, debatable as to the extent to which it has been able to uphold the standards of education or enforce a minimum level of performance on colleges and universities. This tends to become difficult because many a time a move to refuse or reduce grants to these institutions assumes the character of confrontation between the State Governments sponsoring them and the Central Government funding the UGC.

35. To a great extent the quality and employability of college graduates is adversely affected by the fact that arts and humanities are offered as unilinear programmes of study unrelated to the

requirements of real life, multi-faceted development of personality and the reasoning and learning capabilities of students. In the case of sciences, courses are designed essentially to explain concepts without supportive arrangements in the form of laboratory apparatus, kits etc

36. There is no gainsaying that technical education has made a significant contribution to India's economic development. However, the system is now facing serious problems of obsolescence of machinery and equipment and the lack of wherewithal for research and training in respect of new technologies. These inadequacies have been removed for sheer survival.

37. Other measures necessary for effecting improvement in institutions of technical education are : finding ways to attract good teachers; increasing interaction with industry; involving the faculties in application of modern technology for the benefit of the common man in rural areas; reducing the disparities between State Colleges, Regional Colleges and IITs; and establishment of networking arrangements between different types of institutions.

38. It is also argued that instead of subsidising education in engineering institutions at the cost of the taxpayer, the organised private sector, which absorbs the bulk of manpower emerging from it, should be made to support technical education to some extent.

39. The role of teachers is central to all processes of formal education since they interpret the policies and programme as much through their personal example as through teaching-learning processes. Unfortunately, enough attention has not been paid to the updating of curricula for their training. Teacher education, therefore, has little relevance to the needs of the day. This inadequacy is compounded by the fact that teaching is the last choice in the job market.

40. The participation of a section of teachers in party politics has had serious repercussions on education. It has led to the politicisation of teachers organisations, has affected discipline and their wholehearted application to their time-honoured role.

41. There is widespread concern, particularly amongst teachers themselves, about the manner of implementation of the merit promotion scheme for teachers. Many of them feel that once age and years of service rather than erudition and competence as teachers, becomes the basis of advancement in career, not

enough incentive will be left for pursuit of excellence.

42. There are wide disparities in the system of education from the view point of access, equity and impact. Even though rural areas account for three-fourths of the population, they are getting much less resources for education. While the well-to-do, who have access to the privately managed "quality" institutions located in urban area, take away the lion's share of unreserved seats in professional institutions, children of rural areas are put to a great disadvantage because of the relatively poor quality of rural schools.

43. Girls and children from the Scheduled Tribes and Scheduled Castes have made considerable progress during the last decade. In spite of this, they still are at the lowest ladder of educational attainment. While girls suffer because of social prejudices and their commitments to the care of siblings and household chores, the children of Scheduled Castes and Scheduled Tribes suffer from disabilities which cannot be removed merely by reservation of seats. Majority of them, besides suffering from the limitations of first generation learners also suffer from the after effects of early childhood malnutrition, a sense of social isolation, unsuitable work habits and lack of self-confidence in realising their academic potentials. They find it difficult to adjust to the general stream of students. To obviate the resulting psychological strain, special programmes are needed for enhancing their competence and facilitating their adjustment.

44. The interface between education and job market is characterised by lack of complimentarity. Jobs requiring general education are not increasing at the same rate as the availability of manpower. On the other hand, for many jobs requiring technical competence and manual skills, appropriately trained manpower is not available in sufficient numbers. The most glaring example of lack of work orientation is provided by the fact that in the I-V, VI-VIII, IX-X or 10+ stages of education, there is nothing in the school system to increase the students' proficiency for the unorganised sector in agriculture or related rural occupations.

45. It is true that from Rs. 114 crores in 1950-51, the expenditure on education went up to Rs. 2304.16 crores in 1976-77. However, it is also true that because of inflation and growth of the number of students, at constant prices of 1970-71, between 1950-51 and 1975-76 per pupil per annum expenditure went down, from Rs. 468.9 to Rs. 330.9 for college education and from Rs. 1640.4

to Rs. 890.1 for professional education, registering a marginal increase of 1.1 per cent per annum in the case of elementary education rising from Rs. 41.9 to Rs. 55.2 respectively.

46. Despite the constitutional imperative for elementary education, within the plan outlays for education, its share declined from 56 per cent in the First Plan to 35 per cent in the Second Plan, 34 per cent in the Third Plan and 30 per cent in the Fourth Plan. In the Sixth Plan, its share was 36 per cent. On the other hand, between the First and Sixth Plan, the share of university and college education has gone up from 9 per cent to 16 per cent.

47. The States provide around 70 per cent of the overall plan expenditure for education. Their capacity being variable, children from poorer States like Bihar, U.P., Orissa, J & K, Madhya Pradesh, and Rajasthan are at a great disadvantage as compared to better-off States. Per capita budget expenditure on education in 1982-83 was as low as Rs. 40.5. in U.P., Rs. 49.4 in Madhya Pradesh and Rs. 51.2 in Bihar as compared to Rs. 100 in Punjab and the all India average of Rs. 68.2.

48. Education Policy is an instrument for shaping the future. It has an impact on a whole generation. It can be framed by a few people on the basis of their own perceptions. It calls for the involvement of those dealing with or interested in education, in an open ended discussion, of various viewpoints and issues.

49. Besides developing physically, intellectually and aesthetically integrated human beings with a scientific temper and democratic values as well as social awareness, education has to imbue the pupils with a healthy attitude to hardwork and dignity of labour, commitment to principles of secularism and social justice and dedication to the integrity, honour and the development of the country. In addition to this, for economic development and employment, education has to equip young people with appropriate knowledge and skills.

50. Besides integrating the individual into the social system, education also reduces disparities between human beings. In view of this, the expectation of equal access to education for all citizens irrespective of their region, caste, creed, sex or economic strata is fully justified.

51. Education provides support to all other spheres of development. In return, it must also receive support from them in its endeavours. No law-and-order system can survive if even

educated people do not have respect for life or a sense of right or wrong. Democracy and civic life becomes a casualty if education does not make them tolerant of a different point of view. A country cannot grow if a spirit of adventure and the confidence to innovate is not instilled in the children. No programme requiring participation of the masses in development can make a headway without the input of education.

52. There is a widespread feeling that the system of education cannot be improved by marginal changes and that this is the time for attempting its radical transformation. There is also a feeling that education is an indispensable instrument for the overall transformation of society, curbing fissiparous tendencies, creating an atmosphere for equity and social justice and modernizing production. It is also recognized that the outreach and effectiveness of education can be enhanced dramatically by the use of new educational technologies.

53. Educational planners are convinced that a good policy gets checkmated during implementation if the attitudes of those involved in implementation or the constraints inherent in the environment are not kept fully in view. Inevitably, any radical change in the education system will come in conflict with vested interests benefiting from the present state of education. Changes in the examination system, innovative approach to teaching, development of new curricula, enforcement of discipline, restructuring of management and decentralisation of the administrative authority will encounter strong resistance.

54. Depoliticisation too will be opposed not only by politicians who may lose their cadres but also by some of the academic and non-academic staff who will lose their capacity to hold institutions to ransom.

55. The present orientation of media, lack of trained manpower for software development, non-availability of a television channel committed to educational use and the absence of well established pedagogy for distance education will also, in the short run, operate as constraints.

56. The inherent difficulties faced by the poor with regard to participation in education have to be regarded as a major problem in universalisation of elementary education. Non-formal and part-time education for children unable to attend the school in regular hours is best conducted by voluntary agencies. In the

absence of these, in many areas, this approach will run into difficulties.

57. In the context of the poor, the present orientation of research and development activities in technical institution may also pose difficulties. It will not be easy to persuade them to pay special attention to the generation of relevant knowledge for rural and unorganised sector since, in terms of widespread recognition and material benefits, it will not offer the same rewards as working for the organized corporate sector.

58. Legal constraints are often more implacable than others. In the Indian situation, the implications of the constitutional amendment to make education a Concurrent Subject are still to be worked out. The Central Government will have to decide upon the parameters of intervention for influencing the National Education System for a qualitative improvement in prioritisation and performance. Amongst others, it will have to be decided as to what measures should be taken to see that language does not remain a barrier to mobility in the India of tommorrow. In this context and also in relation to the objective of national integration, the need and means of establishing a uniform national core curriculum will have to be considered.

59. If the management of universities is to be restructured to align them to the realities of the day, State and Central Governments will have to amend their laws. The much debated issue of whether or not the Central Government should assume some powers for depoliticising and modernising the universities will also have to be decided through consultations.

60. It is urgently necessary to think carefully of financial constraints because without adequate resources it will not be possible to fulfil the objectives of universalisation of elementary education, expansion of vocational training, removal of illiteracy, improvement of teaching, and establishment of institutions of excellence. How the necessary resources may be raised is a matter for urgent consideration. In this connection, perhaps, a Joint Commission of Centre and States could be set up to study the problem of resources for education and work out a strategy for mobilising these on a long-term basis.

61. Education is no more than a sub-system of the total societal system. It is, therefore, conditioned by the environment and it also, inevitably, displays its salient characteristics in its own

functioning. Indian society does not always respond warmly to new initiatives and change oriented measures. The intellectual sophistication nurtured through centuries of philosophical debate is misused by the bureaucracy and the intellectual establishment to frustrate new moves, without appearing to do so, by circumscribing these with so many preconditions and qualifying clauses that the whole momentum is lost.

62. Two other characteristics need special mention. Firstly, the disinclination to delegate real power to lower formation will be an obstacle to the establishment of a meaningful nexus between the school and the community. Secondly, the compartmental character of the system will create difficulties in establishing horizontal linkages between education and other interdependent development activities.

63. Taking an optimistic view of the success of measures for population control and also of the success of universalization of education it appears, on rough calculation, that the budgetary requirements for school education, at the same unit cost in 1990 will be four times the level of allocations of 1980-81. India will require roughly 22 lakh additional teachers by 1990 over the number (21.7 lakhs) in 1981. These estimates are based on the quality of school education remaining unchanged. This, however, is unrealistic. Provision of a minimum of physical facilities cannot be delayed.

64. Considering the above scenario and the constraints on continuous participation in education beyond 11 years of age, some educational planners have suggested a model of universalisation of education which ties up the Anganwadis with primary schools and provides for pre-primary and primary education up to class V. It also advocates distance education through Open Schools on a large scale between classes VI to VIII and large scale diversion into vocationalisation at an earlier age than envisaged in the 10+2+3 system.

65. A strategy for the spread of education and improvement of its quality is unthinkable without establishing a learning society in which people of all ages participate in continuing education. Such an environment cannot be established without a massive thrust for adult education which will not be concerned with mere literacy but will seek to enhance economic performance as well as the quality of life of the participants. It has been recognised that

women will have to be assigned a central place in the programmes of adult education. If they are convinced of the benefits of education, the programmes of universalisation of elementary education in general and the participation of girls in particular, will be greatly strengthened. It will also provide dynamism to the programmes for family welfare, energy, conservation, prevention of deforestation, health care, immunisation, etc., besides expanding the base for democracy.

66. Particular emphasis has been placed on vocational programmes, as a part of the 10+2 stage of the secondary system and also before this stage and outside this system. An important conclusion in this is that vocationalisation should not be linked only with employment in industry. It should be aligned with agriculture, the service sector and various programmes of rural development as well. It should also prepare young people for self-employment. It needs emphasis that vocationalisation is not an inexpensive programme since it often involves considerable expenditure on machinery, equipment and consumables. Therefore, it should be taken up after ascertaining the probability of finding jobs for those who are inducted into it.

67. Amongst the major constraints to vocationalisation are: the absence of reliable models for assessment of manpower requirements, resistence of certain castes and classes to vocational training, absence of vertical and horizontal mobility for those who go into the vocational stream: and lack of clarity about the relationship between vocationalisation and professional education on the one hand and with production centres on the other.

68. Other ideas which have been highlighted are the relationship between all kinds of education and the social system. It has been suggested that all streams and stages of education would acquire much greater meaning if educational system is decentralised and its management is assigned to the community participating in or benefitting from it.

69. The community participation implicit in this has a particular relevance to school education which is sought to be placed increasingly in the hands of village committees, obtaining from them resources, assistance and guidance. District Education Centres would be the focal points for educational planning, training, monitoring, extension and action research. Decentralization of the planning function will also ensure that the special needs of

education for the handicapped and the specially gifted children will not be neglected.

70. As far as higher education is concerned, a strong body of opinion favours measures to divert those who do not have a scholastic bent of mind to vocational training. Some of the measures suggested in this connection are administration of scholastic aptitude test for entry into colleges and universities and delinking of degrees from jobs.

71. Other measures proposed for improving the relevance and quality of undergraduate and post-graduate education are a purposeful move for granting autonomy to more and more colleges, culminating eventually in moving entirely away from the system of common examinations and affiliation between universities and colleges. It has also been suggested that courses in arts, science and humanities should be restructured on a modular pattern with much greater inbuilt flexibility to establish closer links with the pupil's interests, society and the world of work. In these, it will be possible to combine courses with orientation towards theoretical knowledge, language communication skills, culture, sports and programmes of a vocational character.

72. A moratorium has been proposed on the expansion of the traditional pattern of college, favouring the opening of only those colleges which have a vocational character and are linked with identified multi-disciplinary tasks. New colleges will bridge the world of work with the world of knowledge by offering integrated courses for: Agriculture and Home Economics; Forestry and Land Water development; Urban Planning and Transport Management; Public Management and Office Management etc.

73. It has been proposed that multipronged strategy for the New Education Policy should seek to integrate the requirements of universalisation of elementary education; production of sophisticated manpower to deal creatively with new technologies; diversified vocationalisation; and the creation of an overall environment for development through adult and continuing education.

ANNEXURE II

NATIONAL POLICY ON EDUCATION, 1986

A SUMMARY*

Introduction

1. Education has continued to evolve, diversify and extend its reach and coverage since the dawn of human history. Every country develops a system of education to express and promote its unique socio-cultural identity and also to meet challenges of the times. There are moments in history when a new direction is to be given to an age-old process. That moment is today.

2. The country has reached a stage in its economic and technical development when a major effort must be made to derive maximum benefit from the assets already created and to ensure that fruits of change reach all sections. Education is the highway to that goal.

3. The national policy of 1968 was a significant step in the history of education in the post-independent India. It aimed to promote national progress, a sense of common citizenship and culture, and to strengthen national integration. It laid stress on the need for a radical reconstruction of the education system and to improve its quality at all stages. It gave much greater attention to science and technology, the cultivation of moral values and a closer relation between education and the life of the people.

4. Since the adoption of the 1968 policy, there has been considerable expansion in educational facilities all over the country at all levels. More than 90 per cent of the country's rural habitations now have schooling facilities within a radius of one kilometre. There has been sizable augmentation of facilities at

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*This summary has been prepared by the author from a copy of the policy statement published by the Union Ministry of Human Resource Development and supplied with their letter No. 3866/J.S. (P & AE)/86 dated June 3, 1986.

other stages also. Perhaps the most notable development has been the acceptance of a common structure of education throughout the country and the introduction of the 10+2+3 system by most states. In addition to laying down a common scheme of studies for boys and girls in the school curricula, science and mathematics were incorporated as compulsory subjects and work experience assigned a place of importance. While the achievements are impressive, the general formulations incorporated in that policy did not get translated into a detailed strategy of implementation accompanied by the assignment of specific responsibilities and financial and organisational support. As a result, problems of access, quality, quantity, utility and financial outlay, accumulated over the years, have now assumed such massive proportions that they must be tackled with the utmost urgency.

5. Education in India stands at the cross-roads today. Neither normal linear extension nor the existing pace and nature of improvement can meet the needs of the situation. In the Indian way of thinking, a human being is a positive asset and a precious national resource, which needs to be cherished, nurtured and developed with tenderness coupled with dynamism. Each individual's growth presents a different range of problems and requirements at every stage from the womb to the tomb. The catalytic action of education in this complex and dynamic growth process needs to be planned meticulously and executed with great sensitivity.

6. Life in the coming decades is likely to bring new tensions together with unprecedented opportunities. To enable the people to benefit from the new environment, new designs of human resource development will be required. The coming generations should have the ability to internalize new ideas constantly and creatively. They have to be imbued with a strong commitment to higher values and to social justice. All this implies better education. Besides, a variety of new challenges and social needs make it imperative for the government to formulate and implement a new education policy for the country. Nothing short of this will meet the situation.

National System of Education

7. The concept of a national system of education implies that upto a given level, all students, irrespective of caste, creed, location

or sex, have access to education of a comparable quality. To achieve this, the government will initiate appropriately funded programmes. Effective measures will be taken in the direction of the common school system recommended in the 1968 policy.

8. The national system of education pre-supposes a common educational structure. The 10+2+3 structure has now been accepted in all parts of the country. Regarding further break-up of the first ten years, efforts will be made to move towards an elementary system comprising five years of primary, three years of upper primary, and two years of higher or secondary stage of education.

9. The national system will be based on a national curricular framework which contains a common core along with other components which are flexible. The common core will include the history of India's freedom movement, the constitutional obligations and other contents essential to nurture national identity. These elements will cut across subject areas and will be designed to promote values such as India's common cultural heritage, egalitarianism, democracy and secularism, equality of the sexes, protection of the environment, removal of social barriers, observance of the small family norm and inculcation of the scientific temper.

10. Minimum levels of learning will be laid down for each stage of education. Steps will also be taken to foster among students an understanding of the diverse cultural and social systems of people living in different parts of the country. Besides promotion of the link languages, programmes will be launched to increase substantially the translation of books from one language to another and to publish multilingual dictionaries and glossaries. The young will be encouraged to undertake re-discovery of India, each in his own image and perception.

11. In higher education in general, and technical education in particular, steps will be taken to facilitate inter-regional mobility by providing equal access to every Indian of requisite merit, regardless of his origin. The universal character of universities and other institutions of higher education is to be underscored. In the areas of research and development and education in science and technology, special measures will be taken to establish network between different institutions in the country to pool their resources and participate in projects of national importance.

12. The nation, as a whole, will assume the responsibility

of providing rsource support for implementing programmes of educational transformation, reducing disparities, universalisation of elementary education, adult literacy, scientific and technological research etc.

13. Life-long education is a cherished goal of the educational process. This pre-supposes universal literacy. Opportunities will be provided to the youth, housewives, agricultural and industrial workers, professionals and others to continue the education of their choice at the pace suited to them. The future thrust will be in the direction of open and distance learning.

Partnership between Centre and States

14. The constitutional amendment of 1976, which has put education in the Concurrent List, requires a new sharing of responsibilities between Union Government and the states in respect of education as a vital area of national life. While the role and responsibility of the states in regard to education will remain essentially unchanged, the central government will accept larger responsibility to enforce the national and integrative character of education, to maintain quality and standards (including those of the teaching profession at all levels), to study and monitor the educational requirements of the country as a whole in regard to manpower for development, to cater to the needs of research and advanced study, to look after the international aspects of education, culture and human resource development and, in general, to promote excellence at all levels of the education pyramid. The national policy will be oriented towards giving effect to meaningful partnership between the centre and the states in letter and spirit.

Education for Equality

15. The new policy will lay special emphasis on the removal of disparities and to equalise educational opportunity by attending to the specific needs of all those who have been denied the opportunity so far. Education will be used as an agent of change in the status of women. There will be a well-conceived edge in favour of women in order to rectify the omissions and distortions of the past. This will be an act of faith and social engineering. The removal of women's illiteracy and obstacles inhibiting their access to and retention in elementary education will receive

over-riding priority through provision of special support services, setting of time targets, and effective monitoring. The policy of non-discrimination will be pursued vigorously to eliminate sex stereo-typing in vocational and professional courses and to promote women's participation in non-traditional occupations as well as in existing and emerging technologies.

16. Specific measures (as listed in the policy) will be undertaken to bring educational development of the scheduled castes at par with that of the non-scheduled caste population at all stages and levels of education and in all areas and dimensions. Similarly, specific measures (as listed in the policy) will be undertaken urgently to bring the scheduled tribes on par with others. Suitable incentives and adequate institutional infrastructure will also be provided to all educationally backward classes of society, particularly in the rural areas, hill and desert districts, remote and inaccessible areas and islands.

17. Greater attention will be paid to the education of those minority groups which are educationally deprived or backward. This will include the constitutional guarantees given to them to establish and administer their own educational institutions and protection to their languages and culture. Simultaneously objectivity will be reflected in the preparation of text-books in all school activities; and all possible measures will be taken to promote integration based on appreciation of common national goals and ideals in conformity with the core curriculum.

18. Specific measures (as listed in the policy) will be undertaken in order to integrate the physically and mentally handicapped with the general community as equal partners, to prepare them for normal growth and to enable them to face life with courage and confidence.

19. A vast programme of adult and continuing education will be implemented through various ways and channels (some listed in the policy). This programme will be directed towards continuous upgradation of skills so as to provide man-power of the kind and in numbers as required by the society. This programme will also be linked with the national goals (as indicated in the policy).

Reorganisation of Education

20. Recognising the holistic nature of child development, early

childhood care and education (ECCE) will receive high priority. Programmes of ECCE will be child-oriented and focussed around play and the individuality of the child. Formal methods and introduction of three 'R's will be discouraged at this stage. The local community will be fully involved in these programmes.

21. The new thrust in elementary education will be directed towards enrolment and retention of all children upto 14 years of age and substantial improvement in the quality of education. A child-centred and activity-based process of learning will be adopted at the primary stage. The first generation learners will be allowed to set their own pace and given supplementary remedial instruction. The school timings as well as vacations will be adjusted to the convenience of children. Provision will be made for essential facilities in primary schools, including at least two reasonably larger rooms, which are usable in all weather, and the necessary toys, blackboards, maps, charts and other learning material. Arrangement will be made to provide two teachers, one of whom is a woman, in every school, the number increasing as early as possible to one teacher per class.

A phased drive, symbolically called Operation Blackboard, will be undertaken with immediate effect to improve primary schools all over the country. Construction of school buildings will be the first charge on NREP and RLEGP funds. The policy of non-detention at the primary stage will be retained making evaluation as disaggregated as feasible.

22. A large and systematic programme of non-formal education will be launched for school drop-outs, for children from habitations without schools, working children and girls who cannot attend whole-day schools. Modern technological aids will be used to improve the learning environment of N.F.E. centres. Dedicated young men and women from the local community will be chosen to serve as instructors; and particular attention will be paid to their training. Steps will be taken to facilitate entry of the non-formal students into the formal system and all necessary measures will be taken to ensure that the quality of non-formal education is comparable with formal education.

23. The new policy will give the highest priority to solving the problem of children dropping out of school and will adopt a number of meticulously formulated strategies based on micro-planning and applied at the grass-roots level all over the country

in order to ensure children's retention at school. This effort will be fully coordinated with the network of non-formal education. It shall be ensured that all children, who attain the age of 11 years by 1990, will have had five years of schooling or its equivalent through non-formal stream. Likewise, by 1995, all children upto 14 years of age will be provided free and compulsory education.

24. Access to secondary education will be widened to cover areas unserved by it at present. In other words, the main emphasis will be on consolidation.

25. Pace-setting schools (called Navodaya Vidyalayas) intended to provide accelerated and good quality education to children with special talent or aptitude, irrespective of their capacity to pay for it, will be established in various parts of the country. Their broad aim will be to serve the objective of excellence, coupled with equity and social justice (with reservation for scheduled castes and tribes), promoting national integration by providing opportunities to talented children, largely rural, from different parts of the country to live and learn together, to develop their full potential, and, most importantly, to become catalysts of a nation-wide programme of school improvement. The schools will be residential and free of charge.

26. Vocational education will be a distinct stream intended to prepare students for identified occupations spanning several areas of activity. Vocational courses will ordinarily be provided after the secondary stage, but keeping the scheme flexible, they may also be made available after class VIII. Health planning and health service management should optimally interlock with the education and training of appropriate categories of health manpower through health-related vocational courses at the +2 stage. Efforts will be made to devise similar vocational courses based on agriculture, marketing, social services etc. Emphasis in vocational education will also be on development of attitudes, knowledge and skills for entrepreneurship and self-employment. The establishment of vocational courses or institutions will be the responsibility of the government as well as the employers in the public and private sectors. The government will, however, take special steps to cater to the needs of women, rural and tribal students and the deprived sections of society. Appropriate programmes will be started for the handicapped. Graduates of vocational courses will be given opportunities for professional growth, for

career improvement and lateral entry into courses of general, technical and professional education through appropriate bridge-courses. Need-based vocational programmes will also be made available to neo-literates, youth who have completed primary education, school drop-outs, persons engaged in work and unemployed or partially employed persons. Tertiary level courses will be organised for the young, who graduate from the academic stream of the higher secondary stage and require vocational training. It is proposed that the vocational courses should cover 10 per cent of the higher secondary students by 1990 and 25 per cent by 1995. Government will also review its recruitment policy to encourage diversification at the secondary level.

27. Urgent steps will be taken to protect the system of higher education from degradation. In view of mixed experience with the system of affiliation, autonomous colleges will be helped to develop in large numbers until the affiliating system is replaced by a freer and more creative association of universities with the colleges. Similarly, the creation of autonomous departments within universities on a selective basis will be encouraged. Special emphasis will be laid on linguistic competence. There will be increasing flexibility in the combination of courses. State level planning and co-ordination of higher education will be done through councils of higher education. The UGC and these councils will develop coordinating methods to keep a watch on standards. Research in the universities will be provided enhanced support and steps will be taken to ensure its high quality. Suitable mechanisms will be set up by the UGC for co-ordinating research in the universities, particularly in thrust areas of science and technology, with research undertaken by other agencies. Research in indology, humanities and social sciences will receive adequate support. Effort will be made to delve into India's ancient fund of knowledge and to relate it to contemporary reality. This will imply the development of facilities for intensive study of Sanskrit and other classical languages. In the interest of greater coordination and consistency in policy, sharing of facilities and developing inter-disciplinary research, a national body covering higher education in general and agricultural, medical, technical, legal and other professional fields will be set up. The open university system will be developed to augment the opportunities of higher education and to provide an instrument for democratising

education.

28. A beginning will be made to delink degrees from jobs in selected areas. This delinking will be applied in those services for which a university degree need not be a necessary qualification. Concomitant with delinking, an appropriate machinery such as a national testing service will be established in appropriate phases, to conduct tests on a voluntary basis to determine the suitability of candidates for specified jobs and to pave a way for the emergence of norms of comparable competence across the nation.

29. The new pattern of rural universities will be consolidated and developed on the lines of Mahatma Gandhi's revolutionary ideas on education so as to take up the challenges of micro-planning at grass-root levels for the transformation of rural areas. Institutions and programmes of Gandhian Basic education will be supported.

Technical and Management Education

30. In order to improve the situation regarding manpower information, the recently set up Technical Manpower Information System will be further developed and strengthened. Continuing education, covering established as well as emerging technologies, will be promoted. As computers have become important and ubiquitous tools, a minimal exposure to computers and training in their use will form part of professional education. Programmes of computer literacy will be organised on a wide scale from the school stage. In view of the present rigid entry requirements to the formal courses restricting access to a large segment of people to technical and managerial education, programmes through distance learning process, including use of mass media, will be offered. A strong guidance and counselling service will also be provided. In order to encourage students to consider self-employment as a career option, training in entrepreneurship will be provided through modular or optional courses in degree and diploma programmes.

31. Research as a means of renovation and renewal of educational processes will be undertaken by all higher technical institutions. It will primarily aim at producing quality manpower, capable of taking up R & D functions. As technical and management education is expensive, a number of steps (listed in the policy) will be taken for cost effectiveness and to promote excel-

lence. In view of the integrated nature of the task, the Ministry of Human Resource Development will coordinate the balanced development of engineering, vocational and management education as well as the education of technicians and craftsmen. The All India Council for Technical Education will be vested with statutory authority for planning, formulation and maintenance of norms and standards, accredition, funding of priority areas, monitoring and evaluation, maintaining parity of certification and awards and ensuring coordinated and integrated development of technical and management education.

32. In the interest of maintaining standards and for several other valid reasons, the commercialisation of technical and professional education will be curbed. An alternative system will be devised to involve private and voluntary effort in this sector of education in conformity with accepted norms and goals.

Making the System Work

33. In order to ensure that education system under the new policy will work so that all teachers will teach and all students will study, the undermentioned strategy will be adopted :

- (a) A better deal to teachers with greater accountability,
- (b) Provision of improved student services and insistence on observance of acceptable norms of behaviour,
- (c) Provision of better facilities in the institutions, and
- (d) Creation of a system of performance appraisal of the institutions according to standards and norms set up at the national or state level.

Value Education

34. The role of education as a forceful tocl for the cultivation of social and moral values will be duly emphasised. The educational process will be used to foster universal and eternal values oriented towards the unity and integration of our people and to eliminate obscurantism, religious fanaticism, violence, superstition and fatalism.

Languages

35. Implementation of the language policy* contained in the

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* The language policy contained in the 1968 education policy statement has been reproduced in Annexure III to facilitate referencing.

1968 education policy statement will be implemented more energetically and purposefully.

Books and Libraries

36. Measures will be taken to improve the quality and accessability of books at low prices and to promote the reading habit of Indian citizens. Authors' interest will be protected. A nation-wide movement for the improvement of existing libraries and the establishment of new ones will be taken up. Provision will be made in all educational institutions for adequate library facilities and improvement of the status of librarians.

Media and Educational Technology

37. Educational technology will be employed in the spread of useful information, the training and retraining of teachers, to improve quality, sharpen awareness of art and culture, inculcate abiding values, etc. Radio and TV programmes as also the films, which clearly militate against proper educational objectives and encourage elements like consumerism and violence will be prevented. Production of high quality children's films will be promoted.

Work Experince

38. Work experience viewed as purposive and meaningful manual work resulting in either goods or services useful to the community will be organised as an integral part of the educational process. This experience should be helpful to the students entering the world of work. Appropriate pre-vocational programmes provided at the lower secondary stage should facilitate the choice of vocational courses at the subsequent stage.

Science Education

39. Science education will be strengthened so as to develop in the child well defined abilities and values such as the spirit of enquiry, creativity, objectivity, the courage to question and aesthetic sensitivity. Science education programmes will be designed to enable the learner to acquire problem-solving and decision-making skills and to discover the relationship of science with health, agriculture, industry and other aspects of daily life.

Sports and Physical Education

40. A nation-wide infrastructure for physical education, sports and games will be built into the educational edifice. As a system

which promotes an integrated development of body and mind, yoga will receive special attention. Efforts will be made to introduce yoga in all schools and teacher education courses. Sports and physical education will be treated as an integral part of learning and they will be included in the evaluation of performance.

The Role of Youth

41. Opportunity will be provided for the youth to involve themselves in national and social development through educational institutions and outside them. The students will be required to participate in one or the other of the existing schemes like the NSS and NCC. The National Service Volunteer Scheme will also be strengthened.

Examination Reform

42. The examination system will be reorganised so as to ensure a method of assessment which is a valid and reliable measure of the student's development as well as a powerful instrument to improve teaching and learning. This reform will include introduction of the semester system from the secondary stage onwards in a phased manner and the use of grades in place of marks.

The Teacher and his Training

43. The methods of recruiting teachers will be reorganised to ensure merit, objectivity and conformity with spatial and functional requirements. The pay and service condition of teachers will be made commensurate with their social and professional responsibilities and with the need to attract talent to the profession. Efforts will be made to provide for uniform emoluments, service conditions and grievance-removal mechanism for teachers throughout the country. Guidelines will be formulated to ensure objectivity in the posting and transfer of teachers. Norms of accountability will be laid down with incentive for good performance and dis-incentive for non-performance.

44. The new programmes of teacher education will emphasise continuing education and the need for teachers to meet the thrusts envisaged in this policy. District Institutes of Education and Training (DIET) will be established with capability to organise pre-service and in-service courses for elementary school teachers and for the personnel working in non-formal and adult education. As DIETs get established, sub-standard institutions for teacher

training will be phased out. The National Council of Teacher Education will be provided the necessary resources and capability to accredit institutions of teacher education and provide guidance regarding curricula and methods.

Management of Education

45. An overhaul of the system of planning and management of education will receive high priority. The departments of education at the centre and the states will be strengthened through the involvement of professionals. The Indian Education Service as an all India service will be established in consultation with the state governments. District Boards of Education will be created to manage education upto the higher secondary level in the district. Special efforts will be made to train educational planners, administrators and heads of institutions.

Financial Resources

46. Financial resources, to the extent possible, will be raised by mobilising donations, asking the beneficiary communities to maintain school buildings and supply some consumables, raising fees at the higher levels of education and effecting some savings by more efficient use of the facilities. Institutions involved with research and development of technical and scientific manpower will be urged to mobilise some funds by levying a cess or charge on the user agencies, including government departments and entrepreneurs. The government and the communities in general will find funds for such programmes as universalisation of elementary education, liquidating illiteracy, ensuring equality of and access to educational opportunities, enhancing social relevance, quality and functional effectiveness of educational programmes, generating knowledge and developing technologies in scientific fields crucial to self-sustaining economic development, and creating a critical consciousness of the value and imperatives of national survival.

47. Education will be treated as a crucial area of investment for survival and national development. While the actual requirement of funds for education will be computed from time to time on the basis of monitoring and review, outlay on education will be stepped up to the extent essential for implementation of this policy in the Seventh plan. It will be ensured that from the Eighth plan onwards it will uniformly exceed 6 per cent of the national income.

ANNEXURE III

LANGUAGE POLICY CONTAINED IN THE 1968 EDUCATION POLICY SYSTEMENT

Development of Languages

Regional Languages : The energetic development of Indian languages and literature is a *sine qua non* for educational and cultural development. Unless this is done, the creative energies of the people will not be released, standards of education will not improve, knowledge will not spread to the people, and the gulf between the intelligentsia and the masses will remain if not widen further. The regional languages are already in use as media of education at the primary and secondary stages. Urgent steps should now be taken to adopt them as media of education at the university stage.

Three Language Formula : At the secondary stage, the state governments should adopt, and vigorously implement, the three language formula, which includes the study of a modern Indian language, preferably one of the southern languages, apart from Hindi and English in the Hindi-speaking states, and of the regional language, Hindi and English in the non-Hindi speaking states. Suitable courses in Hindi and/or English should also be available in universities and colleges with a view to improving the proficiency of students in these languages upto the prescribed university standards.

Hindi : Every effort should be made to promote the development of Hindi. In developing Hindi as the link language, due care should be taken to ensure that it will serve, as provided for in Article 351 of the constitution, as a medium of expression for all the elements of the composite culture of India. The establishment, in non-Hindi speaking states, of colleges and other institutions of higher education which use Hindi as medium of instruction, should be encouraged.

Sanskrit : Considering the special importance of Sanskrit to the growth and development of Indian languages and its unique contribution to the cultural unity of the country, facilities for its teaching at the school and university stages should be offered on more liberal basis. Development of new methods of teaching the language should be encouraged, and the possibility explored of including the study of Sanskrit in those courses (such as modern Indian languages, ancient Indian history, Indology and Indian philosophy) at the first and second degree stages, where such knowledge is useful.

International Languages : Special emphasis needs to be laid on the study of English and other international languages. World knowledge is growing at a tremendous pace, specially in science and technology. India must not only keep up with this growth but should also make its own significant contribution to it. For this purpose, study of English deserves to be specially strengthened.

APPENDIX I

BOARD OF PRE-UNIVERSITY EDUCATION, KARNATAKA

TWO-YEAR PRE-UNIVERSITY COURSE

NORMS FOR JUNIOR COLLEGES

Management

1. Management shall be a registered body registered under the Societies Registration Act or any other law.

Solvency

2. The Management shall have assets of at least Rs. 1,00,000 and deposit Rs. 15,000 with Board as soon as permission to start the college is given.

Governing Body

3. Every college shall be managed by a regularly constituted governing council consisting of 7-11 members, of whom the principal of the college shall be one.

Strength

4. There shall ordinarily be two sections in the Ist Year of the Pre-University Course with a strength of not less than 40 in each section.

Accommodation

5. The building in which the college is to be located shall be suitable and each lecture room be well-lit and ventilated. There shall be adequate accommodation for the number and strength of

the classes, as regards rooms, floor-space and cubic space and be as under**

During the First Year of Starting

For two sections in I Year P.U.C. with strength between 40-80

		Size	*Nos*
(*a*) Lecture halls	...	22′×30′	2
(*b*) Smaller halls	...	22′×15′	2*
(*c*) Library	...	22′×30′	1
(*d*) Staff room	...	22′×30′	1
(*e*) Office and Principal's room	...	22′×30′	1
(*f*) Ladies' room	...	22′×15′	1
(*g*) Reading room	...	22′×30′	1
SCIENCE BLOCK			
(*a*) Practical halls	...	25′×45′	1**
(*b*) Practical halls	...	25′×35′	2
(*c*) Science Stores	...	25′×10′	2

Second Year of Starting

Add—			
(*a*) Lecture halls	...	22′×30′	2
(*b*) Smaller halls	...	22′×15′	2

[Adequate sanitary arrangements—separately for girl students—to be provided.]

Staff

6. The strength and qualifications of the teaching staff shall be in conformity with rules framed by the Board from time to time in this behalf.

The conditions governing the tenure and salary of the teaching staff shall be in conformity with the service regulations framed by the Board from time to time in this behalf and shall not be changed to their detriment without the prior approval of the Board. The general staff pattern shall be, at least, one lecturer for each of the subjects of study introduced in the college.

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*For bifurcated class for languages, etc.

**(Chemistry).

Qualifications : First or second class Master's Degree in the subject.

Pass class Master Degree holders, working as tutor-demonstrators or teachers in colleges and schools and having completed three years service as on 1st April 1971 are also eligible for appointment.

Workload

Principal—5 to 6 hours per week.

Lecturers—16 hours in the case of Humanities and Commerce.
—90 hours in the case of Science (including practicals).

Demonstrators—24 hours of laboratory work and correction work.

Librarian Physical Culture Instructor	to be provided

Laboratory Equipment and Chemicals

Chemicals worth at least Rs. 12,500 for Chemistry, Rs. 5,000 for Physics, Rs. 5,000 for Biology, as per standard list to be prescribed by the Board.

Library

To be in charge of a librarian duty qualified in library science. There should be adequate furniture, and at least 5,000 volumes.

RULES FOR STARTING AND FOR RECOGNITION OF JUNIOR COLLEGES

The management proposing to start a junior college shall be a registered body, registered under the Societies Registration Act or any other law, having assets of the value not less than Rs. 1,00,000.

2. The correspondent on behalf of the management shall apply to the Director of Pre-University Education and *Ex Officio* Secretary to the Board of Pre-University Education for permission to start the college, in the prescribed form in duplicate, which can be obtained from the Office of the Board on payment of Rs. 5 per set, to be credited to the nearest Treasury to the budget head "XXII—Education—F. General—J. Misc. XIV. Board of Pre-

University Education—2. Miscellaneous", and challan sent to the Board Office not later than the 15th of October of the preceding year, and shall satisfy the Board :

(*a*) that the college will supply a need in the locality having regard to the type of education intended to be provided by the college, the existing provision for the same type of education made by the other colleges in the neighbourhood, and the suitability of the locality where the college is to be established;

(*b*) that the college will be under the management of a regularly constituted governing body consisting of not less than 7 members and not more than 11 members including the principal of the proposed college;

(*c*) that the strength and qualifications of the teaching staff and the conditions governing their tenure of office are such as to make due provision for the course of instruction, teaching or training to be undertaken by the college;

(*d*) that the accommodation for the college and equipment for teaching are suitable and adequate;

(*e*) that due provision has been made or will be made for a library;

(*f*) where the permission is sought to start a course in any branch of experimental science, that arrangements have been or will be made in conformity with the norms prescribed for imparting instruction in that branch of science in a properly equipped laboratory;

(*g*) that the college rules fixing the fees, if any, to be paid by the students will not be so framed as to involve unfair competition with any existing college or institute in the same place or neighbourhood as would be injurious to the interests of education, provided that the fee levied by the college will not be less than the standard fees prescribed by the Board and not, in any case, more than twice the standard fees;

(*h*) that provision has been made for such other matters as are in the opinion of the Board of Pre-University Education necessary for the maintenance of standards;

(*i*) that after recognition all changes effected by the management in teaching staff and all other changes affecting the conditions and terms of recognition will forthwith be reported to the Director.

Fee for Registration

3. A sum of rupees 500 shall be paid as Registration Fee by the management seeking premission to start the Two-year Pre-University Course for the first time. This fee shall be remitted to the Government Treasury under the head "XXII—Education—F. General—J. Misc. XIV—Board of Pre-University Education—2. Miscellaneous" and the Treasury challan, in proof of such remittance shall invariably be attached to the application without which the application will not be considered.

When it is proposed to seek permission for introducing new subjects in an institution already recognised, a sum of Rs. 50 shall be paid as recognition fee for each subject, subject to a maximum of Rs. 200 irrespective of the number of subjects.

Fee once paid is not refundable under any circumstance.

Stability Fund

4. The management shall be required to deposit with the Board Rs. 15,000 before it can be permitted to start the College. The deposit will be refunded to the management at the end of 3 years, after the Board is satisfied about the stability of the management to run the institution.

5. On receipt of the application, the Board shall:

(*a*) direct a local enquiry to be made by an Inspection Committee authorised by the Board in this behalf in respect of the information furnished in the application and such other matters as may be deemed necessary and relevant;

(*b*) thereupon, the inspection committee shall, submit a report to the Board on the following points, after such enquiry as might be deemed necessary :

- (i) whether the proposed Junior College is considered essential : (a) for fulfilling a legitimate need in the area where it is to be located, or (b) for other reasons (to be stated); and
- (ii) whether on the basis of such information as might be

available, it is considered that the management has the capacity to run the junior college.

The Inspection Committee shall be appointed by the end of November and shall submit its report by the end of January.

(*c*) thereafter, the matter shall be referred to the Standing Committee of the Board for recognition, for its opinion on the application, and

(*d*) the Board shall, after receipt of such opinion of the Standing Committee either grant or refuse the application in part or whole, with the prior approval of the Government.

Where the application or any part threeof is granted the Board shall specify the courses of instruction in respect of which the college is given permission, and where the application or any part thereof is refused—the ground of such refusal shall be stated. The decision of the Board in this behalf shall be communicated to the applicant not later than 15th May.

An application under Rule 2 may be withdrawn at any time before an order is made.

6. The Board, after satisfying itself that the management has fulfilled all the conditions laid down, shall issue orders of recognition to the institution, as early as possible, at any rate before the end of September of the year of starting.

Every junior college recognised by the Board, shall conform to and be bound by the Rules of the Board in force for the time being.

Appointments to the teaching staff of the junior college shall be made only after the principal has been given an opportunity of expressing his views.

All appointments and changes thereon shall be reported to the Board for approval.

7. No junior college shall impose levies from its teaching staff for instituting recurring and non-recurring scholarships or for meeting the general or special expenditure of the College of management or impose cuts for any other purpose without prior sanction of the Board.

8. Every junior college shall make adequate provision for the annual medical examination of its students.

9. The junior college shall arrange to have its accounts audited each year by a registered auditor. The year for this purpose shall be from 1st April to 31st March. The annual accounts and the audit report should reach the Board before the end of June of each year.

10. The following Registers and Records in the form that may be approved by the Board shall be maintained by each recognised junior college :

(*a*) A register of admissions and withdrawals;
(*b*) A register of attendance;
(*c*) A register of fees paid showing dates of payment;
(*d*) A counterfoil fee receipt book;
(*e*) Account books showing the financial transactions of the college as separate from those of the management. The accounts shall show transactions in full;
(*f*) A register of scholarships and concessions of all kinds whether of tuition, boarding or lodging;
(*g*) A register of marks obtained by each student at the college terminal examinations;
(*h*) A register or other record of addresses of students;
(*i*) A counterfoil book of transfer certificate;
(*j*) A service register as prescribed from time to time for each member of the staff;
(*k*) A register of members of the staff, showing qualifications, previous experience, salaries, number of hours of work and classes and the subject taught; and
(*l*) Other registers as may be found necessary by the Board.

11. It shall be open to a junior college, after obtaining the previous approval of the Board to suspend instruction from the beginning of an academic year in any subject or subjects or courses of study for which the college or institute is recognised.

The classes in the subject or subjects suspended shall not be re-started without obtaining the previous sanction of the Board, and if the work is not resumed at the end of a period of three years, the recognition previously granted shall be regarded as having lapsed.

Provided that, where in any year, a college being prepared to make the usual arrangements to give instruction in subjects in which it has been recognised, does not for want of students offer instruction in one or more of these subjects, and it reports to the Board before the 1st of August, it shall not be deemed that the college or institute has suspended instruction in the subject or subjects concerned.

Extension of Recognition

12. Where a junior college desires to add to the courses of instruction in respect of which it is recognised, the procedure prescribed above shall, so far as may be, followed.

Inspection of Junior Colleges and Reports

13. (1) Every recognised junior college shall furnish such reports, returns and other information as the Board may require to enable it to judge the efficiency of the college.

(2) The Board shall cause every such college to be inspected from time to time by one or more competent persons authorised by the Board in this behalf.

(3) The Board may call upon any junior college so inspected to take, within a specified period, such action as may appear to it to be necessary, on any of the matters referred to in Rule 2 above.

(4) If the Board is satisfied that no such action by the Governing Body is taken or that the action so taken is inadequate, it may with draw recognition granted to the college following the procedure laid down in Rule 14.

Withdrawal of Recognition

14. (1) The rights conferred on a junior college by recognition may be withdrawn in whole or in part or modified if the college has failed to carry out any of the provisions of prescibed norms or the college has failed to observe any of the conditions of its reccgnition or the college is conducted in a manner which is prejudicial to the interests of education.

(2) Before considering the proposal for withdrawal or modification of such rights, the Board shall issue a notice to the principal as well as to the correspondent of the college concerned to show cause why the recognition should not be withdrawn or modified, indicating the grounds on

which the action is proposed to be taken. The management and the principal shall be given a reasonable opportunity to file their statements within a period to be specified in such notice.

(3) Provided that the period so specified may, if necessary, be extended by the Board.

(4) On receipt of the representation or on the expiry of the period referred to in sub-section (3) of this rule, the Board, after considering the proposal for withdrawal or modification of recognition together with the representation of the management and after such inspection by any competent person or persons authorised by the Board in this behalf, and such further inquiry as may appear to it to be necessary, shall make its recommendations to the Government. The Government may pass such orders as it deems fit.

Whereby an order made under sub-rule (4) of this Rule, the rights conferred by recognition are withdrawn in whole or in part or modified, the grounds for such withdrawal or modification shall be stated in the order.

APPENDIX II

Extracts from the report of Bhagwan Sahay Committee on "Development of Education in the State of Jammu & Kashmir", 1973

Work experience was the core of the system of basic education, propounded by Mahatma Gandhi. It has also been recommended by the Education Commission and the proposal has met with almost universal acceptance in theory. What is now needed is to devise a feasible programme of translating it into practice on the basis of all our past experiments and what we can learn from the experience of other countries.

Our main proposals on this subject are as follows:

(1) Work experience should be an integral part of all general education in classes I-X. About one-fifth to one-sixth of the total time should be devoted to it. It should be a subject of both instruction and examination.

(2) In classes I-V, activities and work experience of a simple type should be introduced. This may include kitchen gardening, flori-culture, clay modelling, papier mache, paper work, card-board modelling, simpler forms of weaving with ready-made yarn, elementary needle work, etc. At this stage, the wastage is generally higher and the productivity comparatively lower. Work experience at this stage has, therefore, mainly an educational value and the returns from it, if any, can only be marginal and small.

(3) In classes VI-X, however, work experience becomes crucially significant. It is at this age that white-collar attitudes generally develop, and it is, therefore, necessary to counteract them through a strong and effective dose of work experience.

(4) As large a variety of work experience programmes as possible should be selected for introduction in classes VI-X. These

will include agriculture (including kitchen-gardening), horticulture, carpentry, smithy, poultry, apiculture, silkworm rearing, fruit processing, weaving (both cotton and wool), tailoring, embroidery, gabba-making, carpet and durri-making, wood carving, papier-mache, sheep rearing, pisci-culture, all viable local handicrafts, electrical and mechanical trades of local demand or utility, electronics, etc. The main criterion to be adopted is that the work experience introduced has a living place in a society and good potentialities for local use and/or marketing.

(5) Care should be taken to see that work experience does not remain an isolated subject in the curriculum. This does not mean that one needs to go to the other extreme and try to correlate it with all the subjects of the curriculum or make it the medium of education. What we expect, however, is that the scientific and technological base of the programme should receive adequate attention and be properly taught as part of the curriculum and in relation to the related subjects Similarly, when any other aspect of the programme has a relationship with some subject of the curriculum, care should be taken to bring it out.

(6) Since agriculture will be a form of work experience in most rural schools, steps should be taken to provide them with adequate lands, wherever possible, while implementing the Land Ceilings Act.

One major improvement to be made in introducing work experience in schools relates to teacher. In the past, the general practice has been to train school teachers in the craft through a course of varied duration and then expect them to teach work experience in their schools. By and large, this programme has not succeeded. A majority of the teachers, having been brought up in the present educational system, have no apitude for such work. Their technical competence in the craft has generally been poor. A large proportion of these teachers, therefore, has often been unable to repair the tools or to produce good things by themselves or to teach properly. We, therefore, think that work experience in schools should be taught, not only by trained teachers who show the necessary competence but also by skilled craftsmen who should be appointed on a full-time or a part-time basis, as the case may be, and given suitable allowances or salaries for the purpose. The over-riding criterion for their selection should be their competence in their craft and it would do no harm if they are even illiterate to begin with. Efforts should be made, after appointment, to give them some education and many of them would not be unwilling to receive it. But, their qualification in general education or a lack thereof should be no bar to their appointment or continuance in service. We would like the school teachers to be trained in crafts to create the necessary aptitude in them and the proper atmosphere in the schools. They may also teach work experience of an elementary character in classes I-V. In cases where they are specially competent, they may even teach it in the higher classes. But by and large, we expect a skilled craftsman to teach work experience in classes VI-X because, at this stage, a high level of efficiency has necessarily to be maintained, both in the teaching of the craft and its practice by the students.

Another major change we would like to introduce relates to the responsibility of the State in the relation to work experience programmes introduced in schools. The state will have to provide the equipment needed for the purpose and also to make adequate arrangements to see that it is properly maintained. It will have to provide the necessary raw materials and also to take over the finished products and market them. Further, it will have to supply the working capital needed for the programmes. It, therefore, follows that there must be an adequate and efficient official machinery in the Education Department to discharge these responsibilities. In the past, these responsibilities have not been squarely assumed by the State. Consequently, the schools found themselves too ill-equipped to deal with the programmes of work experience which, in result, suffered both economically and qualitatively.

The third major change we propose is that profits from the sale of products turned out by the students as a part of their work experience programme, should be paid to the students themselves in the form of wages. In the past, this aspect of the programme has been sadly neglected. Very often the programmes were so poorly managed that there were no profits at all to distribute. Even when some profits did accrue, they were generally credited to the Treasury. In our opinion a liberal policy should be adopted in computing the profits, namely, the profits should be regarded as the difference between the cost of the raw materials supplied and the price of the finished products and no deductions whatsoever should be made for depreciation of the equipment, or interest on capital, or services provided, etc. Secondly, we also think that it would be a good incentive to the students to pay these profits to them as wages. This will stimulate their interest in the programme. It will build up the values and attitudes essential for creating cost-consciousness and a sense of entrepreneurship. This will also make the parents take interest in the education of their children and will improve both the regularity of attendance on the part of the children and public participation in the education system.

The fourth major change we would like to suggest is that the timings for work experience should be wider than those prescribed for general education. For instance, while it will be obligatory on every student to participate in the programmes of work experience during school time, it should also be open to him to work at his craft after or before school hours if he so chooses. Similarly, it should also be open to him to come to the school on Sundays and other holidays to pursue his craft. It would be equally open to him to attend the school during the vacations and work at the craft. In short, the programme should be developed on the basis of a production centre whose output receives a limited subsidy as indicated above. The tendency to work at the crafts longer and outside the school hours, as indicated above, will grow as the student acquires skills and finds that he can earn money through his work; and we feel confident that, if these suggestions are accepted, quite a proportion of students would be able to earn varying amounts while they are learning. This would be a very desirable development and materially improve the quality of education we provide.

Work experience would no longer be compulsory or an integral part of the curriculum beyond class X. However, even at the higher secondary stage and in colleges and universities, it is essential to provide students with an opportunity to earn while learning. This need will become all the greater when students who have participated in work experience and learned to earn at the secondary stage come up to the higher secondary classes or to the colleges and universities. We, therefore, recommend that production centres in selected forms of work experience should be established in higher secondary schools, colleges and universities. It should be open to students, who have the necessary skills and interest, to work in these production centres at their convenience.

Here also, the State should provide the necessary equipment, teachers and raw materials, and take over the finished products for sale. The profits accruing through the work should, on the lines recommended earlier, be paid to the student. Some of these centres could also be organised in collaboration with dealers in the products concerned.

Ultimately, this programme will have to be extended to all educational institutions and cover all students. But, this cannot obviously be done immediately. We, therefore, propose that an experimental beginning may be made on a sufficiently large scale, as soon as possible, and preferably in 1973-74 itself on the lines indicated below:

(1) Work experience should be introduced in at least two primary and one middle school in the jurisdiction of each inspecting officer. This will make supervision comparatively easy and the scale of work would remain manageable.

(2) About a dozen different types of work experience programmes should be selected and these should be introduced in about a hundred selected secondary schools where the local conditions are favourable for that type of work experience. This will also be quite a manageable programme. The availability of skilled craftsmen to teach difficult types of work experience would be yet another criterion determining the scale of operation.

(3) When a programme is introduced in a school, it need not be immediately made compulsory for all students attending it. In the beginning, participation may be voluntary, but soon afterwards, or within about three years, it should be made obligatory on all students.

We recommended that a suitably selected person should be placed on special duty to prepare detailed plans for the introduction of work experience in selected schools with effect from the next year and also to organise the programme. Later on, it will be necessary to create within the Education Department an adequate and competent machinery to deal with all programmes of work experience.

What is important, however, is not the scale of the experiment but its quality. If the fundamental principles enunciated above are carefully implemented, we have no doubt that the programmes of work experience will succeed and mark a turning point in the educational system. They could then be extended to other institutions in the light of experience gained. By the end of the current decade, it should be an objective of policy to cover all educational institutions with programmes of work experience and also to involve all students.

APPENDIX III

Copy of Chapter III of Report of the "Review Committee on The Curriculum for The Ten-Year School" or the Ishwarbhai J. Patel Review Committee*

SOCIALLY USEFUL PRODUCTIVE WORK

I. THE FRAMEWORK

3.1. Central Place in Curriculum

A review of the present position of the system of education reveals that it is still predominantly bookish in character and generally caters to the needs of society.

The National System of Education as conceived by our leaders during the national movement for freedom and as propounded by Mahatma Gandhi has its genesis in work-based education. Gandhiji was against education leading to the search for white-collared jobs. He was of the opinion that if education is based on Socially Useful Productive Work, it would be an instrument for personality development and social transformation.

After Independence, a number of committees and commissions have been appointed to recommend changes in the system of education. All of them have expressed their appreciation of the Gandhian philosophy of Basic Education as the best solution for our educational problems. It may be mentioned here that although few in number, some Gandhian voluntary organisations have successfully implemented educational programmes based on this philosophy. Tradition, however, dies hard and the system of education continues to be bookish in character and divorced from the needs of society. Socially Useful Productive Work, must therefore, be given a central place in the curriculum at all stages of school education and the content of the academic subjects should be related to it, as far as possible.

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*Ministry of Education and Social Welfare, Government of India, New Delhi, 1977, pages 11-16.

3.2. The Concept

Socially Useful Productive Work may be described as purposive, meaningful, manual work resulting in either goods or services which are useful to the community. Purposive, productive work and services related to the needs of the child and the community will prove meaningful to the learner. Such work must not be performed mechanically, but must include planning, analysis and detailed preparation, at every stage, so that it is educational in essence. Adoption of improved tools and material, where available, and the adoption of modern techniques will lead to an appreciation of the needs of a progressive society based on technology.

It will be recalled that programmes of Work Experience were introduced as a result of the recommendations of the Kothari Commission with the objective of relating education to productivity. These programmes, however, lacked the component of social usefulness and, in practice, were not even casually correlated to other subject areas.

The purpose of demarcating a distinct curricular area as Socially Useful Productive Work is to emphasise the principle that education should be work-centred, as the concept of Socially Useful Productive Work is to be developed in the light of the Gandhian philosophy of Basic Education, and through work.

3.3. Aim

The aim of this curricular area is to provide children with opportunities of participating in social and economic activities inside and outside the classroom, enabling them to understand scientific principles and processes involved in different types of work and in the setting in which they are found in the physical and social environment.

3.4. Criterion for Selection of Activities

The criterion for selection of activities should, thus, be that the work involved is productive, educative and socially useful. It is felt that if Socially Useful Productive Work is given a central and dominant place in the curriculum the gap between work and education will be reduced, the school will not remain isolated from the community and the gulf that divides the affluent from the weaker and poorer sections of the community will be bridged. Such a scheme will provide quality of opportunity for working and learning to all children irrespective of caste, creed, sex and economic status.

It is unfortunate that those who receive education migrate from the villages to the towns, deserting the community which had nurtured them and spent money on their education. A cleavage is, thus, created between the so-called education and the rural masses, resulting in lack of harmony, where previously there was community of outlook. Those who have been thus educated are soon disenchanted as education brings unemployment. A paradoxical situation arises in that national resources are spent on their education only to help them join the ranks of the unemployed.

3.5. Social Service

The component of Social Service in the curriculum is allied to Socially Useful Productive Work. For example, when children participate in an environmental cleanliness programme by way of social service, they can simultaneously prepare compost pits for manure. Similarly, if children conduct surveys of population, habitations or cattle, they can use the information for planning programmes for child-care and sanitation. During the harvesting season when the entire village is under pressure of intensive work, the schools, instead of remaining in isolation can render valuable help.

3.6. Help from and to Other Agencies

Activities under Socially Useful Productive Work must not be confined to the four walls of the school, nor can they be provided by the teacher only. Programmes should, therefore, be so planned and implemented that the local community, community devolopment organisations and governmental agencies participate in them and cooperate with the schools. For example, no school can, by itself, achieve effective results in the environmental cleanliness programme unless the village panchayat extends full cooperation and support to the school. In fact, many governmental and social organisations such as Khadi and Village Industries Commission, All India Handicrafts Board, Harijan Kalyan Samiti do render valuable help to the community. If their programmes can include participation by school children, they will be introduced to activities in which they will realise that they are cooperating with adults.

3.7. Decentralisation

The planning for Socially Useful Productive Work should be decentralised as far as possible. The Central and State agencies should prepare model programmes which will serve as specimens for developing programmes by local institutions. District, taluqa and village level committees should be set up by including representatives from various departments and organisations. These committees should provide plan and programmes to the schools well in advance; these programmes should be reviewed from time to time. The committees should also consider the feasibility of making provision for the supply of raw material and the sale of finished products.

3.8. Need for Core Programmes

Depending upon the needs and facilities available, the activities pertaining to Socially Useful Productive Work will differ from school to school.

But it should be possible to identify common core programmes, which should be undertaken by all schools. The overall programmes should be so designed as to involve regular and universal participation of the children throughout the year.

Productive work and services, where possible, should result in remuneration in kind or cash where possible; this will develop attitudes of self-reliance.

II. OBJECTIVES

The objectives of Socially Useful Productive Work will be to :

(i) prepare pupils to practise and perform manual work individually and collectively;

(ii) acquaint children with the world of work and services to the community and develop in them a sense of respect for manual workers;

(iii) develop a desire to be useful members of society and contribute their best to the common good;

(iv) indicate positive attitudes of team work and socially desirable values like self-reliance, dignity of labour, tolerance, cooperation, sympathy and helpfulness;

(v) help in understanding the principles involved in the various forms of work; and

(vi) lead children to participate increasingly in productive work as they go from one stage of education to another and, thereby, enable them to earn while they learn.

III. PROGRAMME

3.9. Problems Solving Approach

In order to ensure that the educational objectives of this programme are achieved it is necessary to follow the problem solving approach. Children should be made aware of the problems related to their needs; they should be led to arrive at solutions by discussing the material, tools and techniques necessary for performing such work and services.

A built-in system of evaluation should be developed to enable them to improve their performance and to enable teachers to give a fair assessment of their work. As recommended later Socially Useful Productive Work must be given the status of a full-fledged subject in the final public examination taken at the end of Class X.

3.10. Teaching-learning Process : Three Phases

Children have a natural curiosity to explore their environment. They explore the world of work by observation, enquiry and manipulation of material and tools. They learn to work by imitation. They enjoy working together and enjoy helping adults in their work. Therefore, the teaching-learning process in Socially Useful Productive Work will have three phases :

(i) study of the world of work through observation and enquiry;

(ii) experimentation with material, tools and techniques; and

(iii) work practice.

The first two are concerned with preparation for actual participation in productive work and services and the third may lead to remuneration.

3.11. Work Situations : Six Areas

Thus, productive manual work situations relating to production of goods and services will have to be drawn from the areas of :

(i) health and hygiene;
(ii) food;
(iii) shelter;
(iv) clothing;
(v) culture and recreation; and
(vi) community work and social service.

These work situations occur in the home, in the school and in the community. It has already been mentioned that such programmes will have two components :

(*a*) a common core programme;
(*b*) work practice.

The purpose of the common core programme will be to bring about attitudinal changes and to develop readiness for work practice.

The purpose of work practice is to give a vocational bias to the programme. It will, therefore, be repetitive in nature and, it is hoped, remunerative in kind or cash.

3.12. Programmes by Classes

Such programmes will take the form of simple projects in classes III-VII/VIII and will include main and subsidiary crafts in classes VIII/IX and X.

The programme of Socially Useful Productive Work may be summarised as follows :

(*a*) Classes I and II

Helping in work situations in the home, in the school and in the community; manipulating simple material with simple tools for creative self-expression.

(*b*) Classes III-VII/VIII

Common activities pertaining to the six areas mentioned earlier:

(i) Health and Hygiene
Dusting of furniture; cleaning of classrooms, school buildings, the school compound and its vicinity.

(ii) Food
Vegetable gardening or pot culture; cooking of meals.

(iii) Shelter
Construction with plastic, pliable and rigid material.
Maintenance of articles of use.

(iv) Clothing
Spinning and simple handweaving or knitting; washing of clothes; stitching; mending.

(v) Culture and recreation
Decorating the classroom, school and home; flower gardening; preparation for important national days (including hoisting and saluting the National Flag), festivals and school functions.

(vi) Community work and social service
Cleaning the neighbourhood; preparation, maintenance and use of a compost pit; planting and care of shade trees; running of cooperative stores; the school panchayat; helping adults in productive work.

In classes V/VI to VII/VIII activities as in the previous classes will be continued but they will be of an advanced type.

Work practice will be in the form of projects selected from the list given below:

Two projects at least be selected from the following illustrative activities in each class.

1. Health and Hygiene

Making of tooth powder; soap; disinfectants; detergent powder; hair oil; brooms; waste-paper baskets; dust bins; compost manure; first aid boxes; health posters; booklets on health and hygiene; keeping health records; keeping the neighbourhood clean; working at health centres.

2. Food

Growing of selected vegetables and ornamental plants in plots or pits, where possible for sale.

Seed collecting; soil testing; experimentation with different kinds of soil, different types of seeds, different kinds of manure; vegetative propagation by cutting; vegetative propagation by breeding ; vegetative propagation by grafting ; vegetative reproductivity; layering; soil conservation.

Making of jam; jelly; ketchup sauce; pickles; fruit juices; confectionery or bakery items.

Working in canteens or stalls for a specified period.

Packing of food material.

3. Shelter

Making articles of use with the help of any material; making stationery items; white washing; polishing doors, windows, and furniture; canning chairs; repairs of furniture; casual labour work in the school.

3. Clothing

Spinning; making school bags; school uniforms; handkerchiefs; table-cloths; pillow-cases; knitting; making mats.

5. Culture and Recreation

Toy-making: artificial flowers; pottery; painting; making games material; cards for festivals; fancy covers for books and book-binding; fancy candle-making.

6 Community Work and Allied Social Service

Helping adults in their work as Projects, such as, keeping a specified area clean; helping in the care of the sick; first aid; helping at functions and during festivals; traffic control; helping in the literacy campaign.

(c) Classes VIII/XI-X.

Greater emphasis should be placed on work practice in these classes.

Work practice will include one main craft or equivalent service and at least one subsidiary craft or equivalent service.

Main Crafts/Services

(*i*) *Health and Hygiene*
Growing medicinal plants ; eradication of communicable diseases ; paramedical service.

(*ii*) *Food*
Agro-industries; kitchen gardening; pot culture; crop and seed production; repair of farm implements: soil conservation and desert control; horticulture, animal husbandry and dairying; bee keeping; poultry farming; fish culture; bakery; confectionery; cooking.

(*iii*) *Shelter*
Pottery; masonry work; workshop practice (mechanical); workshop practice (electronics); cane and bamboo work; housecraft; blacksmithy; foundry work: carpet weaving.

(*iv*) *Clothing*
Production of cotton, wool, silk and other fibres; weaving; dress making; knitting; hosiery work; embroidery work; dress designing; leather work.

(*v*) *Culture and Recreation*
Making toys and puppets; making and repairing musical instruments; making games material; printing; book binding; making stationery; photograph.

Subsidiary Crafts/Services

(*i*) *Health and Hygiene*
Cleanliness of the neighbourhood, well and pond and the disposal of garbage, construction and toilet facilities and compost pits; making tooth picks, tooth powder, soap, detergents, disinfectants, first aid boxes; construction of waste-paper baskets, dust bins, garbage cans, brooms; brushes, cob-web cleaners, dusters; maps, etc., detection of adulteration.

(*ii*) *Food*
Distribution of fertilisers and insecticides; processing and pre-

servation of food; hydroponics; mushroom culture; khandsari gur and candy making; catering; making jam, jelly, squashes, pickles, bari and papad etc.; packing food; marketing.

(*iii*) *Shelter*

Home, village and town planning.

Lac culture.

Renovation and effecting minor repairs in buildings, fittings, furniture and household articles; decorating the home; gardening; surface decoration; interior decoration; construction of decorative pieces; plaster of paris work; chalk and candle making; making limestone.

(*iv*) *Clothing*

Spinning of different fibres; dyeing and printing; repair of garments; laundry work.

(*v*) *Culture and Recreation*

Stage craft; making costumes; holding exhibitions.

IV. TEACHERS

3.13. Importance of Teachers

The provision of properly skilled teachers for the implementation of the programme of Socially Useful Productive Work is of the utmost importance. In order to give this area of work its proper place in the school programme it is recommended that :

(i) the professional status of teachers of Socially Useful Productive Work should be the same as that of other teachers;

(ii) there should be provision for the part-time employment of skilled personnel for different activities;

(iii) there should be cells for Socially Useful Productive Work in the State Departments of Education and the State Institutes of Education to develop programmes of in-service training;

(iv) a scheme of course content of Socially Useful Productive Work for Teacher Training Colleges should be produced by NCERT in collaboration with such other institutes which have included manual labour in their regular programmes.

V. IMPLEMENTATION

3.14. Committees

Coordinated efforts should be made for the implementation of the programme.

High level committees at the Central level and State levels should be constituted by the respective Departments of Education so that the decisions made by them should invariably be accepted and implemented without delay. These Committees should meet regularly to review the progress of work in these areas and remove difficulties in implementation and also create a climate of opinion in favour of this area of the curriculum.

APPENDIX IV

List of Equipment and Apparatus for Science for Classes IX and X Prescribed by Central Board of Secondary Education for its schools

1. PHYSICS

(COURSE—A)

(for a group of 20 students)

Sl. No.	*Name of the Equipment*	*Quantity*
1.	Pipette (25 ml)	5
2.	Set of slotted wts 100 gm to 1 kg	1 set
3.	Vernier callipers	10
4.	Graduated cylinders 0-25 ml 0-50 ml 0-100 ml 0-250 ml	2 each
5.	Burette 50 ml	2
6.	Funnel	2
7.	Spirit level	5
8.	Screw Gauge	10
9.	Plumb line	10
10.	Fortins' Barometer complete with mercury	1
11.	Inclined planes (Adjustable at different angles)	5
12.	Wooden tray with hook	5
13.	Spring Balance 0-100 gm 0-250 gm 0-500 gm 0-1 kg	5 each
14.	Empty pan for Balance	5
15.	Single pulley	5

16. Set of pulleys	2 sets
17. Spherometers	5
18. Wooden Bridges	10
19. Fractional weight box	5
20. Pendulum bobs—(2 cm dia)	10
21. Bucket and cylinder	5
22. Over flow can	5
23. Physical Balance	5
24. Weights box	5
25. Iron stands (1 m long) heavy base	5
26. Stop watch/stop clock	5
27. Measuring tape	1
28. Meter scale	10
29. 1/2 meter scale	10
30. Beakers	
100 ml, 200 ml, 500 ml	5 each
31. Glass Tubing	
32. Hard glass test tubes	10
33. Tripod stand	5
34. Wire gauge	5
35. Torch 3 cells	2
36. Enamelled jug 5 litres	2
37. Drawing boards	10
38. Mercury	2 kg.
39. Bulb holder (Torch)	10
40. (a) R.D. Bottle	10
(b) R. Density Bench	5
41. Concave lens f=10 cms	5
f=15 cms	5
42. Convex lens f=10, 15 cms	10 each
43. Concave mirror -do-	10 each
44. Convex mirror -do-	10 each
45. Optical bench	5
46. Glass plates (15 cm × 15 cm)	10
47. Magnifying glass	5
48. Glass slab (7.5 × 5 × 2 cm)	10
49. Prisms (3 × 3 × 3 cm Base)	10
50. Plane mirror strips 3 × 10 cms	10
51. Ground glass screen	10
52. Clinical thermometers	2

53. Thermometers	
0-110° (1 degree graduation)	10
0-110° (1/2 ,, ,,)	10
0-110° (1/5 ,, ,,)	5
54. Calorimeters in case	5
55. Steam generator (Boiler)	5
56. Steam trap Brass	5
57. Burner/Heater/Stove	5
58. Hypsometer	5
59. Pullingers apparatus	2
60. Charl's law apparatus	2
61. Tuning forks	
(a) 512 Hz	10
(b) 256 Hz	5
62. Tuning fork set of eight	2 sets
63. Resonance tube apparatus	5
64. Rubber pads	5
65. Bar magnets 5 cm	5 pairs
66. U shape magnet Alnico	2
67. Magnet compass	10
68. 15 cm coil of 53 turns, fitted with Bourdat Horizontal dia	5
69. Leclanche cells	5
70. Daniell cells	5
71. Dry cells torch	10
72. Plug key	
One way	10
Two way	5
Three way	5
73. Stabilised power supply for Diode with built in milliammeter and voltmeter	2
74. Diode with base board	2
75. Galvanometers	5
76. Ammeters	
0-1.5 Amp	3
0-3 Amp	2
0-500 m Amp	5
77. Voltmeter	
0-3 volts	5
0-1.5 volts	5

78. 1 metre long wire fixed on wooden board with terminals at ends (single wire potentiometer)	5
79. Rheostat (different ranges)	5
80. Resistance Box	
0-1,000	5
0-10,000	5
81. Single Resistance in box with Terminals	
1	2
2	2
5	2
10	2
82. Banana plugs	10
83. Bulb holders (220 v. bulbs)	10
84. Switches	10
85. Fuse cut outs	5
86. Female plugs (2/3) plug	10
87. Male plugs (2/3) plug	10
88. Crocodile clips	10
89. Bat eliminator/Lead Accumulator	5
90. Bat charger (if eliminators are not purchased)	1
91. Soldering Iron	2

Consumable Articles

1. Flexible wire	1 coil-90 m.
2. Dcc. wire 22 sevg.	1 kg.
3. Resistance wire	250 gm.
4. Drawing pins	10 pbs.
5. Alpins	10 pbs.
6. Graph paper	50 sheets
7. Drawing sheets	50 sheets
8. Sand paper	10 sheets
9. White paper	1 ream
10. Wax	1 kg.
11. Candles	2 dozen
12. Glycerene commercial	1/2 kg.
13. Kerosene oil	1 litre
14. Turpentine oil	1 litre
15. Valvet corks	1 kg.

16.	Rubber tubing	20 metres
17.	Callotape	5 rolls
18.	Drinking straw	1 pb.
19.	Lead shots	500 gms
20.	Insulating tape	2 coils
21.	Quickfix	2 tubes
22.	Thread	1 roll
23.	Iron dust	500 gm.
24.	Soldering flux	1 pk.
25.	Soldering wire	250 gm.
26.	Torch bulbs	10
27.	Electric bulbs	10
28.	Ammonium Chloride	2 kg.
29.	Copper sulphate	1 kg.
30.	Porous pots for Leclanche cells	10
31.	Porous pots for Daniell cells	10
32.	Zinc rods with Terminals	10
33.	Copper plates with Terminals	10
34.	Soap	2
35.	Matchbox	1 doz,
36.	Duster	10 pc.

2. PHYSICS

(COURSE—B)

1.	Metre Rod	10
2.	1/2 Metre Rod	10
3.	Wooden wedge	10
4.	Weight 25 gm	10
	50 gm	10
5.	Iron stand (1 m long)	10
6.	Spring Balance	
	0-100 gm	5
	0-250 gm	5
	0-500 gm	5
7.	Physical Balance	2
8.	Weight Box	2
9.	Fractional wts	2 set
10.	Pendulum bobs (2 cm. dia)	5

11. R. Density Bench	2
12. Beakers	
100 ml	5
200 ml	5
500 ml	5
13. Uprights for lens/mirror/candle screen	10
14. Concave mirror 15 cm f	5
15. Convex lens 15 cm f	5
16. Plane mirror strips (4×3 cm)	10
17. Wooden Block for mirror strips	20
18. Drawing Boards	10
19. Glass slab (7×5×3 cm)	10
20. Prisms (3×3×3 cms. Base)	10
21. Optical Bench (wooden)	5
22. Resistance Box (0–1000 ohms)	5
23. Rheostat (0—100 ohms)	5
24. Voltmeter (0–5 volts)	5
(0–3 volts)	5
25. Ammeter (0–1.5 Ampere)	5
(0–3 Ampere)	5
26. Leclanche cells	5

Consumable

1. Corks	2 kg
2. White paper	1 ream
3. Drawing pins	10 pks
4. Alpins	10 pks
5. Candle	1 doz.
6. Match Box	1 doz.
7. Ammonium Chloride	2 kg.
8. Zinc Rod	10
9. Porous pots filled in	5
10. Cotton insulation copper wire	1 kg.
11. Flexible wire	1 coil
12. Cello tape	5 coils
13. Sandpaper	5 sheets
14. Graph paper	25 sheets
15. Cardboard	10 sheets

16. Thread Reel	2
17. Quick fix	2 tubes
18. Resistance wire	250 gm.

3. CHEMISTRY

(COURSE A & B)

(A class of 40 students)

1. Alum (common alum i.e. Potash)	500 gm.
2. Aluminium Sulphate	500 gm.
3. Ammonium Hydroxide (Liquor Ammonia)	20 × 500 ml.
(A) Ammonium chloride	500 gm.
4. Ammonium Sulphate	500 gm.
5. Ammonium Phosphate	500 gm.
6. Ammonium Molybdate	250 gm.
7. Barium Chloride	500 gm.
8. Barium Nitrate	500 gm.
9. Bromine	250 gm.
10. Copper chips	1 kg.
(A) Copper Sulphate	500 gm.
11. Ferric Chloride	500 gm.
12. Hydrochloric acid	5 kg.
13. Ferrous sulphate	500 gm.
14. Ferrous sulphide (for Kipps apparatus)	500 gm.
15. Iodine	250 gm.
16. Iron metal (Nails, rods, filings & sheets)	1 kg.
17. Lead metal	500 gm.
(A) Lead Acetate	500 gm.
18. Magnesium metal	250 gm.
19. Nitric acid	5 kg.
20. Di-sodium hydrogen phosphate	500 gm.
21. Manganese dioxide	500 gm.
22. Potassium permanganate	250 gm.
23. Potassium dichromate	250 gm.
24. Potassium Ferricyanide	500 gm.
25. Potassium Ferrocyanide	500 gm.
26. Potassium Nitrate	500 gm.
27. Potassium Chlorate	500 gm.
28. Potassium Iodide	250 gm.

29. Potassium Bromide	250 gm.
30. Potassium Thiocyanate	250 gm.
31. Potassium Chloride	250 gm.
32. Potassium Sulphate	500 gm.
33. Potassium and sodium salts containing the following anions: Chloride, Bromide, Iodide, Nitrate, Carbonate, Sulphate and Phosphate	250 gm. each
34. Sodium Chloride	500 gm.
35. Sodium Carbonate	500 gm.
36. Sodium thiosulphate	500 gm.
37. Sodium acetate	250 gm.
38. Sulphur	1 kg.
39. Sodium Nitroprusside	250 gm.
40. Sodium metal	250 gm.
41. Sodium hodroxide	250 gm.
42. Sodium sulphite	500 gm.
43. Sulphuric acid	10 kg.
44. Salts (chlorides, Nitrates, Oxides, Carbonates etc.) of the following metals: copper, Ferrous, Ferric, Aluminium and Ammonium	250 gm. each
45. Tin metal (plates)	500 gm.
46. Zinc metal (granulated and plates)	1 kg. each
47. Acetic acid	500 ml. or 500 gm.
48. Carbon disulphide	500 ml.
49. Carbon tetra chloride	500 ml.
50. Chloroform	500 ml.
51. Rectified spirit (Ethanol)	500 ml.
52. Formaldehyde (formative)	500 ml.
53. Glucose	500 gm.
54. Methylated spirit	500 ml.
55. Methyle orange	50 gm.
56. Oxalic acid	500 gm.
57. Phenolphthalein	100 gm.
58. Starch (soluble)	250 gm.
59. Sucrose	250 gm.
60. Silver Nitrate	50 gm.
61. Marble chips	1 kg.
62. Litmus	50 gm.
63. Copper oxide	250 gm.

64.	Ferric oxide	250 gm.

Glassware

1.	Beakers	100 ml	25
	,,	250 ml	25
	,,	500 ml	5
	,,	1,000 ml	1
2.	Burettes	50 ml	25
3.	Boiling tubes		6 doz.
4.	Conical flask (250 ml, 150 ml)		5 each
5.	Funnel		50
6.	Separating funnel (250 ml)		5 each
7.	Flat bottom flask 500 ml		25
8.	Glass Rod		5 kg.
9.	Glass tubes (assorted)		10 kg.
10.	Glass capillary tubes		2 gross
11.	Graduated pipette 10 ml		5
12.	Kipps Apparatus (500 ml)		1
13.	Measuring cylinder	50 ml	5
	,, ,,	25 ml	5
	,, ,,	10 ml	5
14.	Measuring flask	100 ml	10
	,, ,,	250 ml	10
15.	Pipette	10 ml	10
	(A) Pipette	25 ml	25
16.	Porcelain Tiles	6″×6″	10
17.	Round bottom flask	500 ml	40
	,, ,,	250 ml	40
18.	Test tubes		4 gross
19.	Watch glass		40

Miscellaneous Articles

1.	Ammeter	2
2.	Voltmeter	2
3.	Behive shelf	40
4.	Brass metal (turnings)	500 gm.
5.	Bronze metal (turnings)	500 gm.
6.	Blue ink (good quality)	500 ml

7.	Burette stand	20
8.	Burners	40
9.	China crucible	40
10.	Connecting wire	100 m.roll
11.	Calorimeter	2
12.	Clamps and bossheads	40
13.	Dry cell (1.5 volt)	6
14.	Electric bulb holder	6
15.	,, ,, (6 volts)	6
16.	Filter paper sheets ordinary	250
17.	Filter paper sheets (good quality)	50 sheets
18.	Gum arabic	500 gm.
19.	Iron stands	40
20.	Kerosene oil	2 litres
21.	Key one way	6
22.	LPG Gas cylinder	1
23.	Corks valvet of different sizes	4 gross
24.	Rubber corks of different sizes	2 gross
25.	Standard toilet soap	1 doz.
26.	Thermometer 110°C and of 10th of div.	6
27.	Thermometer ordinary 360°C	40
28.	Wax paraffin	500 gm.
29.	Turpentine oil	1 litre
30.	Water bath	20
31.	Iron filings	500 gm.
32.	Melting point apparatus	10
33.	PH papers	1 gross
34.	Universal indicator	250 ml
35.	PH chart (coloured)	10
36.	Cathode ray tube	1
37.	Syringe glass 50 ml	10
38.	Weights 50 gm to 1 kg.	1 set
39.	Weight Box (for chemical Balance)	2
40.	Balance (chemical)	5
41.	Berrenger Balance	1
42.	Gas jars	40

4. LIFE SCIENCES

(COURSE A & B)

A. Apparatus

1.	Microscope (compound)	8
2.	Microscope (Dissecting)	8
3.	Pointer Eye Piece (10x)	2
4.	Overhead projector/Microprojector	One
5.	Dissecting trays	25
6.	Dissection box with razor	One
7.	Bone cutter	2
8.	Forceps (6″, 8″, 12″)	2 each
9.	Fine needles	20
10.	Brush (camel hair)	20
11.	Water bath	4
12.	Thermometer	2
13.	Test tube holders	20
14.	Test tube stands	20
15.	Test tubes (corning pyrex)	1 gross
16.	Alpins	500 gm.
17.	Pipette (10 ml.)	10
18.	Thistle funnel	10
19.	Beakers (50, 100, 250, 500 ml)	10 each
20.	Measuring glass jars (50, 100, 500 ml)	2 each
21.	Watch glass (3″ dia)	24
22.	Wire gauge	10
23.	Tripod stand	3
24.	Funnels (2″, 3″)	20 each
25.	Petri dishes (3″)	20
26.	Glass dropper	20
27.	Dropping bottles	20
28.	Staining Racks	2
29.	Reagent bottles (250 ml)	20
30.	Glass tubes	½ kg.
31.	Rubber tube (1 cm dia)	5 metres
32.	Gas jar 10″ with cover	20
33.	Specimen jars with lid	20
34.	Specimen tubes with lid	20
35.	Bell jar	5

36. Hand Lens (3″ dia)	10
37. Plain slides	2 gross
38. Cover slips	2 doz.
39. Ganong's Potometer	2
40. Ganong's Respiroscope	2
41. Beetle traps	One
42. Collecting net	2
43. Insect killing jar	2
44. Glass marking pencil	2
45. Beehive-shelf	2
46. Glass trough	2
47. Double pan balance with weight box	One
48. Spirit lamp	10
49. Pestle and mortar	One
50. Spatula	10
51. Filter papers	2 pkts.
52. Cotton roll	One roll of 500 gm.
53. Plaster of paris	One kg.
54. Bucket (enamelled) with cover	2
55. Mug	2
56. Gas connection (Indane)	One
57. Meter scale	5
58. Stop watch	One
B. Chemicals & Stains	
1. Sodium chloride	500 gm.
2. Potassium permanganate	100 gm.
3. Dettol	250 ml
4. Yeast powder	10 gm.
5. Sugar	20 gm.
6. Calcium hydroxide	50 gm.
7. Sodium bicarbonate	5 gm.
8. Potassium hydroxide	5 gm.
9. Organic manure	5 kg.
10. P.T.C. paper/solution	
11. Different types of fertilizers	50 gm. each
(i) Urea	
(ii) Ammonium sulphate	
(iii) Calcium Ammonium nitrate	
(iv) Muriate of Potash	

  - (v) Potassium Sulphate
  - (vi) Single super phosphate
  - (vii) Tripple super phospate

12. Starch Iodide Solution	125 ml bottle
13. Sulphuric acid	250 ml
14. Fehling's solution A	250 ml
15. Fehling's solution B	250 ml
16. Sudam III solution	125 ml
17. Formalin	500 ml
18. Xylol	500 ml
19. Cobalt chloride crystals	10 ml
20. Chloroform	250 ml
21. Glycerine	100 ml
22. Vaseline	100 gm
23. Stains	100 gm

  - (i) Eosin
  - (ii) Methylene blue
  - (iii) Iodine
  - (iv) Haematoxylin
  - (v) Acetocarmine
  - (vi) Janus Green B
  - (vii) Safranine

C. Permanent Slides

(4 each)

1. T.S. shoot tip
2. T.S. Dicot stem
3. L.S. Dicot stem
4. V.S. of Leaf
5. Striated muscle
6. Cardiac muscle
7. Nerve cell
8. Epithelial tissues
9. T.S. Bone
10. T.S. Cartilage
11. V.S. skin
12. T.S. Stomach
13. T.S. Liver

14. T.S. Kidney
15. T.S. Ovary
16. T.S. Testis
17. T.S. Lungs
18. Blood
19. Bacteria

D. **Preserved Materials:**

1. Spirogyra
2. Rhizopus
3. Moss
4. Fern
5. Pinus (Needles, Male and Female cone)
6. Cycas
7. Different types of improved variety of crops

   Wheat:

   - (i) Sonara-64
   - (ii) Sarbati Sonara
   - (iii) Sonalika
   - (iv) N.P.-884
   - (v) Kalyan Sona

   Rice:

   - (i) Tai Chung
   - (ii) Ratna
   - (iii) I.R.-8
   - (iv) Jaya
   - (v) Basmati

   Maize:

   - (i) Ganga-1
   - (ii) Ganga-101
   - (iii) Ganga rated-2

8. Protein (Egg albumen)
9. Pure variety Pea seeds

E. **Museum Specimens:**

1. Frog L.H.
2. Hydra in a tube
3. Liverfluke

4 Ascaris male and female
5. Earthworm
6. Frog dissected to show:
    (i) General viscera
    (ii) Venous system
7. Dissected Earthworm
8. Dissected Cockroach

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Dr P.D. Shukla had a distinguished career in teaching as well as planning and administration of education spanning three decades. He was Joint Educational Adviser to the Government of India in the Ministry of Education and Chairman of the Central Board of Secondary Education. As Chairman of the National Committee on the 10+2+3 Pattern of Education and Director of the First All-India Survey of Educational Administration, he had ample opportunities to discuss in depth the various problems connected with the different structures of education then prevalent in the country, as also the proposed pattern, with teachers, administrators and policy makers in different States and Territories.

Dr Shukla has had wide interaction with educationists in India and abroad which helped him in formulating his ideas on the 10+2+3 pattern of education in general. Dr Shukla has written comprehensively on various aspects of education. His latest publications include *Life-long Education (1971)*, *Changing Facets of Indian Education (1973)* and *Administration of Education in India (1983)*.

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Dr K.R. Salkar obtained his M.A. degree in economics from Bombay University in 1953 and worked in the Goa government department of education. He was a lecturer at the government polytechnic and later Principal, Government Teachers Training College. Dr Salkar also holds an M.Ed. degree from Poona University and a Ph.D. in population education from Bombay University. He was awarded a fellowship by Unesco. He retired as Assistant Director of Education in 1982. At present he is Public Education Officer, Goa Cancer Society, Dona Paula.

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